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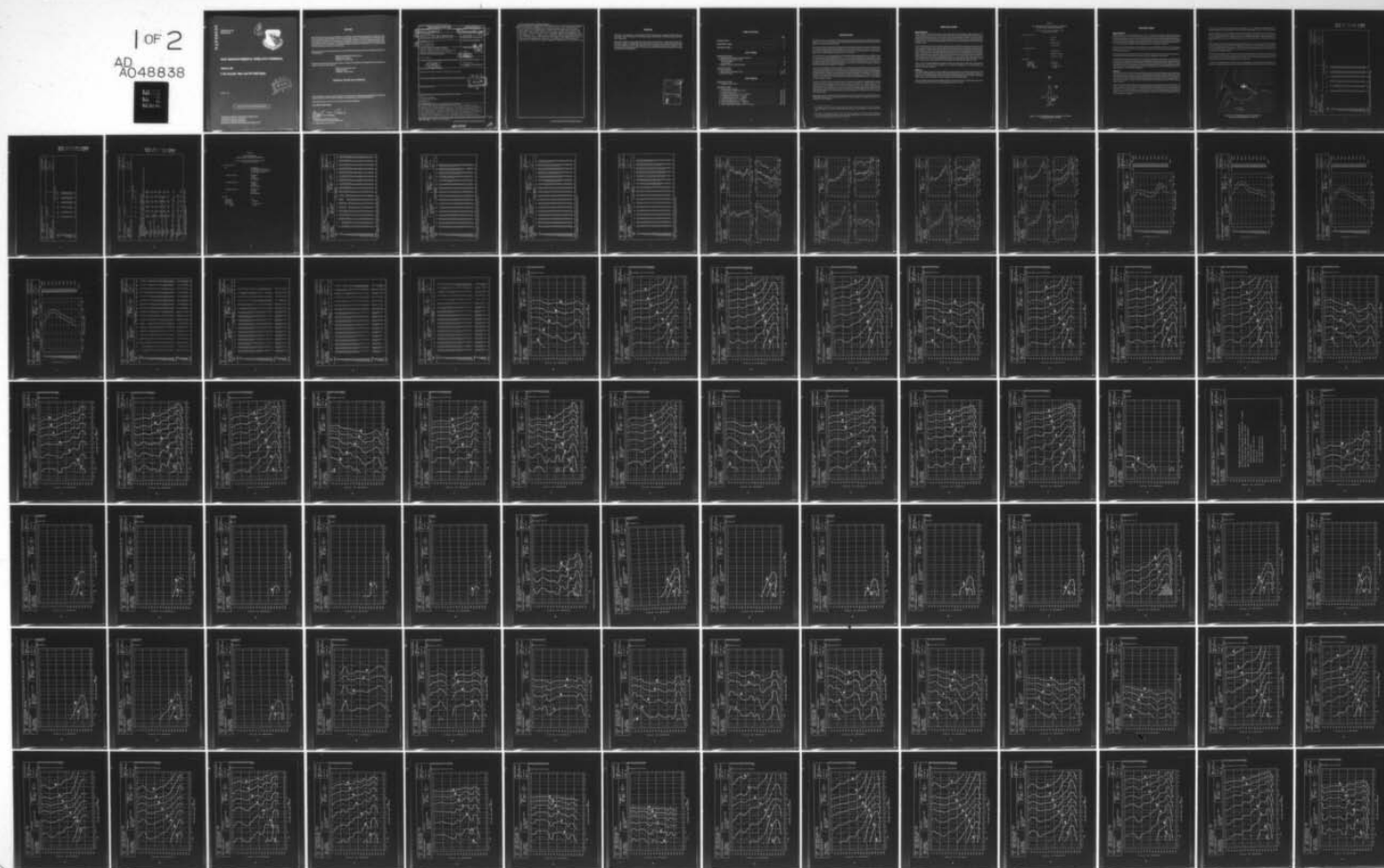
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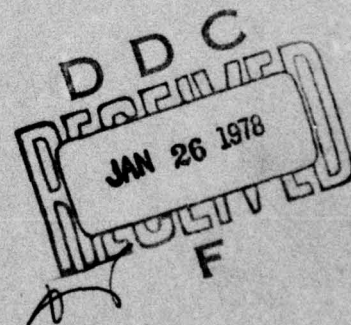


USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 84

C-9A Aircraft, Near and Far-Field Noise

APRIL 1977



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AEROSPACE MEDICAL RESEARCH LABORATORY
AEROSPACE MEDICAL DIVISION
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

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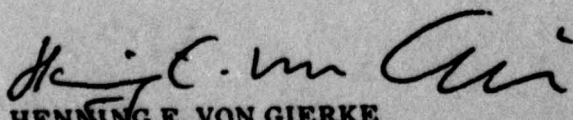
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FOR THE COMMANDER


HENNING E. VON GIERKE
Director

Biodynamics and Bionics Division
Aerospace Medical Research Laboratory

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with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distances from the source. Refer to Volume 1 of this handbook, USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application, AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing definitions of quantities, symbols, equations, applications, limitations, etc.

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PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723104, Measurement and Prediction of Noise Environments of Air Force Operations.

The author gratefully acknowledges Mr. John Cole for his assistance in preparing this report, Mr. Robert Lee and Mr. Jerry Speakman for their assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton for assistance in the mechanics of data processing, and Mrs. Norma Peachey and Mr. Mike Patterson for assistance in typing and preparation of the graphics.

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INTRODUCTION

The USAF C-9A is an aircraft that airlifts medical patients and is powered by two JT8D-9A turbofan engines. The aircraft was manufactured by the McDonnell Douglas Corp and the engines by Pratt and Whitney, a Division of United Aircraft.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the C-9A aircraft.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type noise data in the handbook describe the noise produced during *ground operations* of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15 C temperature, 70% relative humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. Refer to *Volumes 1 and 2* (references 1 and 2) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45333; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1) Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.
2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise*, AMRL-TR-75-50 (2), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.

NEAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near-field noise data on the C-9A aircraft during ground runup operations of its turbofan engines. For these tests the aircraft was located on a taxiway at Wright-Patterson AFB with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the three engine/power conditions. The ground crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crewmember's head would normally be located. He recorded all of the noise samples on magnetic tape. During analysis of each sample, he determined the root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shows the four near-field locations where ground crew are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations in the near-field are difficult since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the C-9A aircraft at the four ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

TABLE 1
MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR NEAR-FIELD NOISE MEASUREMENTS

C-9A Aircraft, Ground Runup, Wright-Patterson AFB
8 October 1974, Tail # 10958

Ground Crew Locations

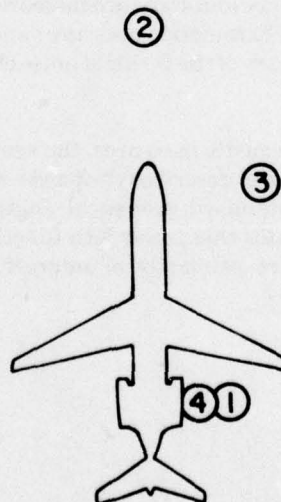
1	Fire Guard
2	Marshal
3	Telephone Talker
4	Trim Adjustment

Aircraft Engine Operation

A	Both Engines Idle
B	Both Engines 1.8 EPR
C	Both Engines 1.9 EPR

Meteorology

Temperature	13.3 C
Bar Pressure	0.742 M Hg
Rel Humidity	47 %
Wind — Speed	1.5 M/Sec (3 Kts)
— Direction	240 Deg



**Figure 1. Near-Field Measurement Locations on a Taxiway
at Wright-Patterson AFB, OH**

FAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near and far-field during a 1-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the ground runup area, ground cover, aircraft orientation and the 19 microphone measurement sites on the semicircle. The center of the 75 meter radius semicircle used in surveying the JT8D-9A engines was on the ground directly below the intersection of the aircraft's centerline and the plane passing through engines' exhaust-nozzle exits. The ground runup pad did not have a blast deflector; therefore, the jets' exhausts were in a "free-flow" condition.

Table 4 provides cockpit readouts of some engine characteristics (EPR, fuel flow, etc.) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All microphone measurement sites are in the acoustic far-field of the source where the sound wave-fronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand-held pole, pointed at the source (0° angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. These samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone.

RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15 C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the C-9A aircraft in a standard format.

Figure 4 and Table 6 present two basic acoustic measures, the acoustic power levels and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure that describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/control specialists.

Estimates of noise levels for intermediate power conditions (e.g., 1.75 EPR) and/or different number of engines operating (e.g., single engine) can be determined as explained in Volume 1 of this handbook.

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables. No data are presented at the 180 degree location for the 1.8 and 2.0 EPR power settings and at the 170, and 180 degree locations for the 1.7 EPR power setting because of turbulent air flow behind the aircraft. Typically, the A-weighted levels for these angles are 10 to 20 dBA below the level measured at the preceding microphone location.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low (e.g., Table 5 and Figure 11 at idle power).

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

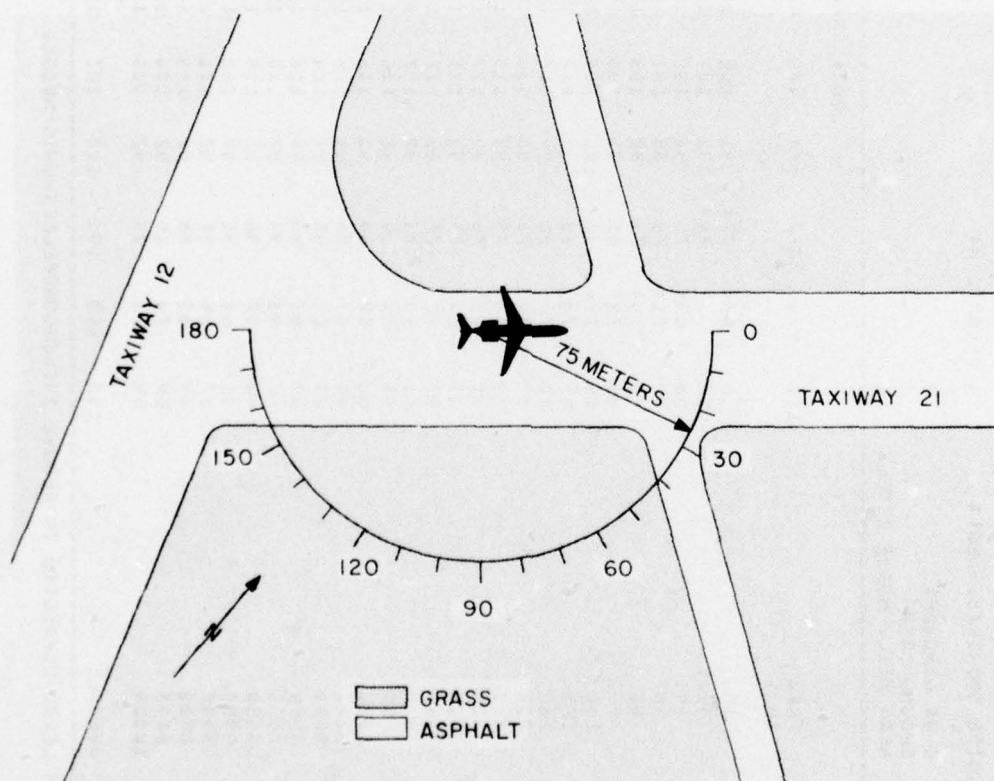


Figure 2. Far-Field Measurement Locations on a Taxiway at Wright-Patterson AFB, OH

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TABLE 1 MEASURED SOUND PRESSURE LEVEL (DB)		IDENTIFICATION:	
2 1/3 OCTAVE BAND			
NOISE SOURCE/SUBJECT:		OMEGA 3.2	
		TEST 74-073-001	
		RUN 01	
C-9A AIRCRAFT		12 MAR 76	
GROUND CREW			
NEAR FIELD NOISE LEVELS		PAGE F1	
		LOCATION/CONDITION	
FREQ (HZ)	1/A	2/A	3/A 4/A 4/B 4/C
25	86	65<	70< 91 102 102
31.5	87	74<	92 102 103
40	86	63<	70 90 102 103
50	87	71<	79< 89 102 102
63	89	74<	79 88 103 104
80	88	74<	81 91 106 106
100	85	75<	80 100 109 109
125	85	78	80 93 113 112
160	90	79	81 94 115 116
200	87	74	76 90 114 115
250	89	73	76 93 115 117
315	91	76	78 94 117 118
400	89	76	75 93 115 117
500	90	72	77 95 117 119
630	88	75	83 92 117 117
800	88	74	84 92 116 117
1000	88	82	84 93 116 117
1250	88	88	88 94 116 116
1600	93	87	90 97 114 115
2000	90	83	93 95 112 115
2500	91	93	99 97 113 113
3150	93	97	96 97 115 115
4000	91	88	91 97 112 114
5000	87	84	87 92 111 111
6300	87	83	88 92 110 109
8000	85	79	85 92 108 108
10000	84	73	79 92 105 105
OVERALL	103	100	103 103 103 127 128

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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TABLE: MEASURED SOUND PRESSURE LEVEL (03)		IDENTIFICATION:				
OCTAVE BAND						
2		OMEGA 3.2				
		TEST 74-073-001				
NOISE SOURCE/SUBJECT:		RUN 01				
C-9A AIRCRAFT		12 MAR 76				
GROUND CREW		PAGE J1				
NEAR FIELD NOISE LEVELS						
		LOCATION/CONDITION				
FREQ (HZ)	1/A	2/A	3/A	4/A	4/B	4/C
31.5	92	71	80	95	106	107
63	93	78	84	94	109	109
125	92	82	85	101	116	118
250	94	79	81	97	120	122
500	94	80	84	98	121	122
1000	93	83	90	98	120	121
2000	96	94	100	101	118	119
4000	96	97	97	100	118	118
8000	90	85	90	96	112	112
OVERALL	103	100	103	108	127	128

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TABLE: MEASURES OF HUMAN NOISE EXPOSURE									
3									
NOISE SOURCE/SUBJECT:	OPERATION:				LOCATION/CONDITION				IDENTIFICATION:
	1/A	2/A	3/A	4/A	4/B	4/C			
C-9A AIRCRAFT									UMEGA 3.2
GROUND CREW									TEST 74-073-001
NEAR FIELD NOISE LEVELS									KUN 01
									12 MAR 76
									PAGE M1
HAZARD/PROTECTION									
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DB) AT EAR									
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DB) AT EAR									
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)									
NO PROTECTION									
OASLC	103	94	102	108	127	128			
OASLA	102	101	104	106	125	126			
T	21	25	15	11	P	P			
MINIMUM QPL EAR MUFFS									
OASLA*	77	72	75	83	103	104			
T	960	960	960	571	16	15			
AMERICAN OPTICAL 1700 EAR MUFFS									
OASLA*	73	66	64	78	97	98			
T	960	960	960	960	50	42			
V-51K EAR PLUGS									
OASLA*	74	70	72	79	100	101			
T	960	960	960	960	30	25			
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51K EAR PLUGS									
OASLA*	60	57	54	65	86	87			
T	960	960	960	960	334	285			
H-133 GROUND COMMUNICATION UNIT									
OASLA*	75	76	73	74	93	99			
T	960	960	960	960	42	36			
COMMUNICATION									
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)									
PSIL	94	88	92	99	120	121			
ANNOYANCE									
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PHN)									
TONE CORRECTION (C IN DB)									
PNLT	117	117	114	122	140	140			
C	1	2	2	1	0	0			

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.
P ADDITIONAL EAR PROTECTION REQUIRED.

TABLE 4
TEST CONDITIONS
FOR FAR-FIELD NOISE MEASUREMENTS

C-9A Aircraft, Ground Runups, Wright-Patterson AFB
8 October 1974 Tail # 10958

Aircraft Engine Operation

Idle	Both Engines 1.05 EPR, Engine Pressure Ratio 375 C EGT, Exhaust Gas Temperature 1000 LBS/HR FF, Fuel Flow
1.7 EPR Engine Runup	Both Engines 1.7 EPR 460 C EGT 5800 LBS/HR FF
1.8 EPR Engine Runup	Both Engines 1.8 EPR 480 C EGT 6600 LBS/HR FF
1.9 EPR Engine Runup	Both Engines 2.0 EPR 510 C EGT 8000 LBS/HR FF

Meteorology

Temperature	13.3 C
Bar Pressure	0.742 M Hg
Rel Humidity	47 %
Wind — Speed	1.5 M/Sec (3 Kts)
— Direction	240 Deg

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																
1/3 OCTAVE BAND																
DISTANCE = 75 METERS																
NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) TEMP = 13 C) OMEGA 1.4																
C-9A AIRCRAFT (IDLE, 1.05 EPR) BAR PRESS = .742 M HG) RUN 01																
JT80-9A ENGINE (BOTH ENGINES) REL HUMID = 47 %) 29 OCT 75																
FAR FIELD NOISE (FREE FLOW)) PAGE 2																
FREQ	ANGLE (DEGREES)															
(HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
25	65<	65<	65<	70<	73<	68<	68<	68<	72<	68<	68<	70<	68<	68<	70<	73<
31.5			69<	71<	73<	70<	69<	70<	71<	73<	73<	71<	69<	71<	73<	74<
40	72<	67<	73<	75<	78<	73<	73<	73<	73<	73<	73<	73<	74<	76<	76<	78<
50	72<	73<	75<	76<	76<	76<	73<	73<	71<	69<	71<	73<	76<	74<	74<	76<
63	70<	74<	72<	73<	76<	73<	69<	69<	69<	74<	75<	73<	73<	69<	73<	74<
80	69<	69<	71<	73<	76<	71<	69<	69<	69<	69<	73<	69<	71<	71<	74<	76<
100	70<	72<	70<	71<	74<			69<	69<	71<	73<	73<	72<	71<	74<	73<
125	74<	69<	72<	71<	73<	70<	70<	70<	71<	73<	73<	73<	72<	73<	71<	75<
160	77	72<	75	73<	73<	72<	71<	72<	73<	71<	73<	73<	73<	74<	73<	76
200	74	77	73	71	69	69	66	68	66	69	67	67	67	68	66	69
250	72	77	73	74	70	69	67	68	68	70	69	67	68	69	66	75
315	73	75	72	73	71	69	68	66	67	68	67	65	64	67	72	78
400	70	76	71	70	69	67	67	67	67	68	66	67	64	61	65	68
500	69	73	72	72	70	68	67	69	71	67	69	65	62	63	65	68
630	71	71	71	72	70	68	69	69	70	69	71	64	63	66	67	74
800	73	75	72	74	73	71	68	69	70	72	73	66	63	66	67	69
1000	75	79	76	77	75	72	71	70	70	73	73	67<	64<	65<	67<	73
1250	81	82	80	79	76	73	71	70	71	73	72	67	64	66	67	72
1600	80	82	82	83	80	77	75	73	74	78	75	70	67	71	72	74
2000	83	84	88	83	82	82	81	80	73	77	73	71	68	69	69	71
2500	90	89	89	87	84	81	84	84	79	80	75	74	70	69	71	74
3150	84	83	83	83	82	80	79	78	77	80	75	72	70	72	72	76
4000	82	83	84	84	83	80	78	76	77	79	76	73	70	72	75	76
5000	79	79	79	80	78	75	73	73	69	73	70	67	64	67	68	69
6300	77	79	77	77	74	73	70	71	68	71	69	66	63	66	66	69
8000	74	76	74	73	71	70	68	67	66	67	65	63	60	63	64	66
10000	70	71	69	69	67	66	63	63	61	59	56	57	54	56	55	57
OVERALL	93	94	94	93	91	89	88	88	86	88	86	85	84	85	85	86

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																	IDENTIFICATION:		
1/3 OCTAVE BAND																			
DISTANCE = 75 METERS																	OMEGA 1.4		
NOISE SOURCE/SUBJECT:																	TEST 75-002-015		
(OPERATION:)																	RUN 02		
(1.7 EPR ENGINE RUNUP)																			
(BOTH ENGINES)																	29 OCT 75		
(FREE FLOW)																	PAGE 2		
C-9A AIRCRAFT																			
JT80-9A ENGINE																			
FAR FIELD NOISE																			
METEOROLOGY: TEMP = 13 C																			
BAR PRESS = .742 M HG																			
REL HUMID = 47 %																			
ANGLE (DEGREES)																			
FREQ (HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	78	79	80	80	81	81	82	86	85	85	85	87	91	95	100	103	103	103	103
31.5	77<	79	78<	79	81	81	82	84	86	87	88	89	92	97	103	105	105	105	105
40	82	82	83	82	84	85	87	85	89	87	88	92	94	100	107	108	107	107	107
50	81	81	83	82	84	85	86	87	87	88	89	93	95	102	107	111	108	107	108
63	81	83	84	84	85	85	87	86	87	90	90	92	96	103	109	113	111	111	111
80	83	84	86	86	87	87	88	88	88	92	93	96	99	105	111	114	112	112	112
100	86	88	87	87	87	88	90	90	91	94	95	98	101	107	112	116	115	115	115
125	88	92	90	89	89	90	91	91	94	95	94	97	100	107	111	113	113	113	113
160	93	93	92	90	90	92	91	95	94	94	94	96	101	106	113	114	114	114	114
200	92	92	91	89	88	89	90	90	92	92	92	93	96	100	105	108	114	111	111
250	85	89	92	89	87	87	88	88	90	91	92	95	98	102	107	112	107	107	107
315	87	89	91	89	87	85	87	89	90	90	91	94	98	101	105	109	105	105	105
400	87	87	89	88	86	84	85	88	89	90	89	93	96	97	103	107	102	102	102
500	86	87	88	87	87	85	87	89	90	92	90	93	97	96	102	106	101	101	101
630	82	87	87	87	87	87	88	88	92	93	91	95	97	95	102	104	99	99	99
800	82	86	87	87	88	87	89	89	91	93	91	96	97	96	102	103	97	97	97
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2000	90	90	90	91	89	88	89	89	91	90	92	95	95	91	96	93	88	88	88
2500	93	93	93	93	92	91	90	88	92	90	91	93	92	88	93	91	86	86	86
3150	94	94	98	97	98	98	96	90	94	95	96	93	93	90	93	91	89	85	85
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8000	84	83	84	84	84	83	82	81	86	84	84	83	83	79	83	79	81	81	81
10000	81	81	82	83	83	79	81	77	82	78	78	77	79	74	78	73	82	82	82
OVERALL	102	103	104	103	103	103	103	102	105	105	106	108	111	115	120	123	121	121	121
< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE																			

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 75 METERS																			
NOISE SOURCE/SUBJECT:																			
(OPERATION:)																			
(TAKEOFF POWER, 2.0 EPR)																			
(BOTH ENGINES)																			
(FREE FLOW)																			
METEOROLOGY:																			
TEMP = 13 C																			
BAR PRESS = .742 M HG																			
REL HUMID = 47 %																			
IDENTIFICATION:																			
OMEGA 1.4																			
TEST 75-002-015																			
RUN 04																			
PAGE 2																			
FREQ (HZ)																			
0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
25	81	81	83	84	84	86	87	87	89	89	93	95	99	105	107	107	107	103	
31.5	80	80	83	83	84	86	87	86	89	90	92	95	101	107	109	109	109	101	
40	82	83	84	84	88	89	88	91	90	94	97	100	105	110	114	113	102		
50	82	84	86	85	89	89	90	90	91	94	95	100	107	112	116	115	103		
63	84	85	87	85	86	89	87	90	91	93	94	97	101	108	113	118	108		
80	87	88	89	90	89	90	91	92	92	95	97	99	105	110	116	119	119	111	
100	90	92	90	90	91	91	93	95	97	98	101	106	112	117	119	121	109		
125	95	95	93	91	93	93	94	97	97	100	101	105	111	118	119	120	106		
160	97	98	96	93	93	93	96	96	96	100	101	106	111	119	121	121	107		
200	90	93	93	93	92	92	94	97	96	98	100	104	111	116	121	118	108		
250	91	93	96	93	91	91	92	92	93	94	98	99	104	110	115	121	118	108	
315	93	93	95	93	91	91	92	93	92	95	98	100	104	109	113	119	118	106	
400	93	91	93	93	90	88	91	92	91	93	96	98	103	106	112	116	114	101	
500	88	91	91	91	90	89	92	93	92	95	98	100	103	107	111	115	112	98	
630	88	91	92	91	92	90	92	93	92	96	99	100	103	107	110	113	110	95	
800	86	88	90	92	92	92	93	94	94	96	99	101	103	107	110	112	109	94	
1000	84	88	88	90	90	90	92	93	93	96	99	100	102	107	109	111	106	91	
1250	84	86	88	89	90	90	91	93	94	96	99	100	101	106	107	109	104	90	
1600	85	87	90	90	91	90	93	93	93	96	99	100	101	105	106	107	103	88	
2000	91	91	90	90	92	90	93	93	94	95	99	98	100	104	103	105	100	83	
2500	90	90	89	90	89	88	91	93	94	94	98	97	99	101	101	102	98	81	
3150	88	89	88	90	90	89	92	92	94	95	98	99	98	101	100	100	97	80	
4000	89	90	91	91	91	89	92	91	95	96	98	99	97	99	98	98	95	77	
5000	84	82	85	84	84	86	87	91	93	94	95	93	97	95	95	91	73		
6300	83	80	84	81	82	81	84	85	88	89	90	93	91	93	92	94	89	69	
8000	81	79	83	80	79	79	81	82	85	86	87	89	88	90	89	93	88	66	
10000	78	75	79	75	75	75	77	80	82	81	80	86	84	86	81	90	82	60	
OVERALL	104	104	105	104	104	103	105	106	107	108	111	113	116	121	126	130	129	118	
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																			

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:

C-9A AIRCRAFT

JT8D-9A ENGINE

FAR FIELD NOISE

OPERATIONS:

IDLE, 1.05 EPR

BOTH ENGINES

FREE FLOW

METEOROLOGY:

TEMP = 15 C

BAR PRESS = 760 MM HG

REL HUMID = 70 %

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-015

RUN 01

29 OCT 75

PAGE 6

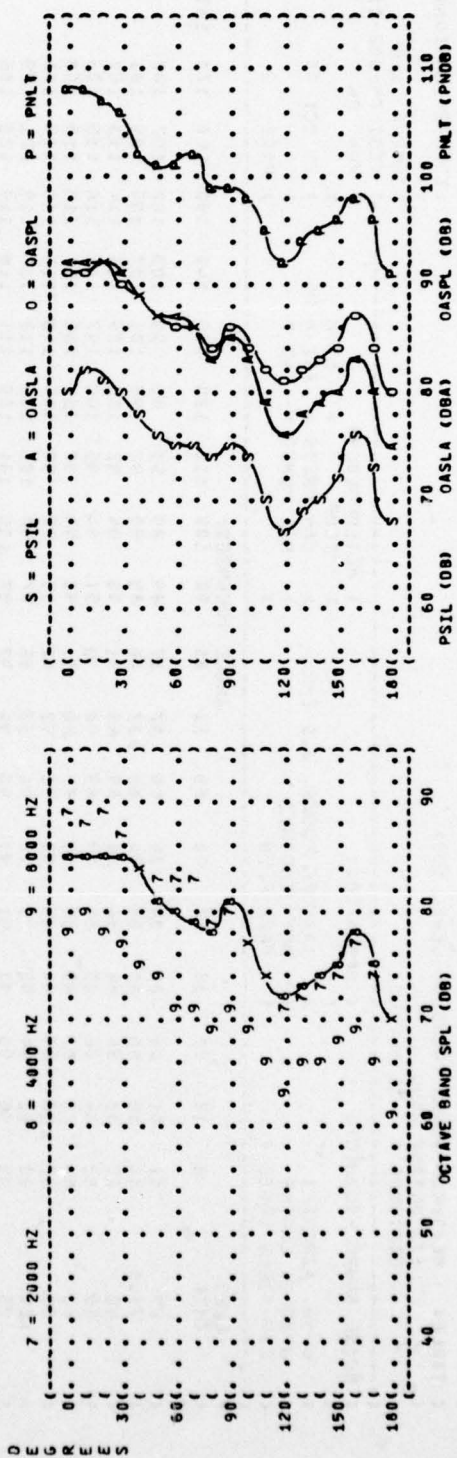
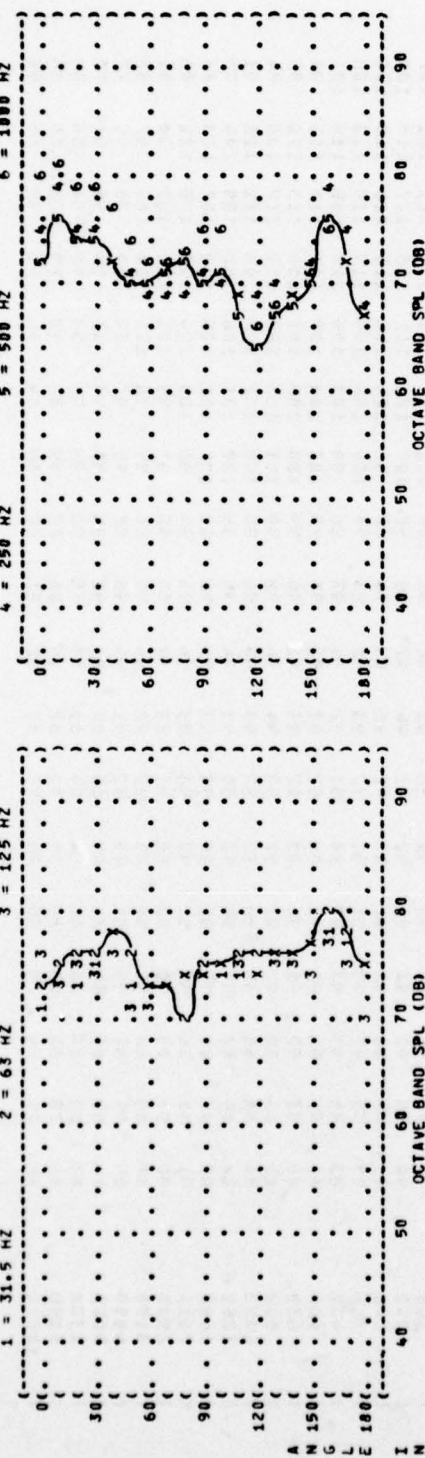
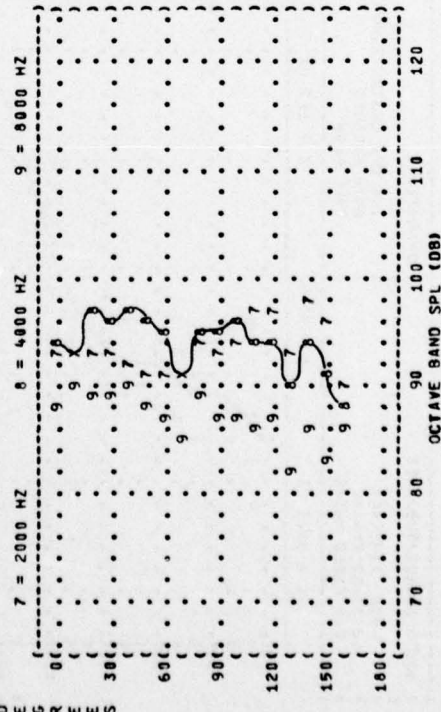
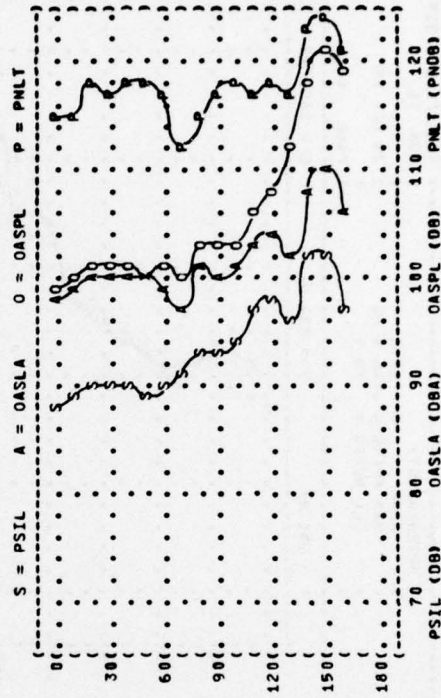
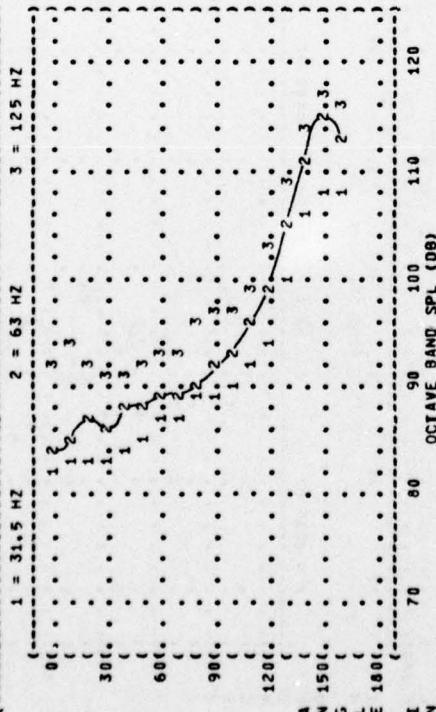
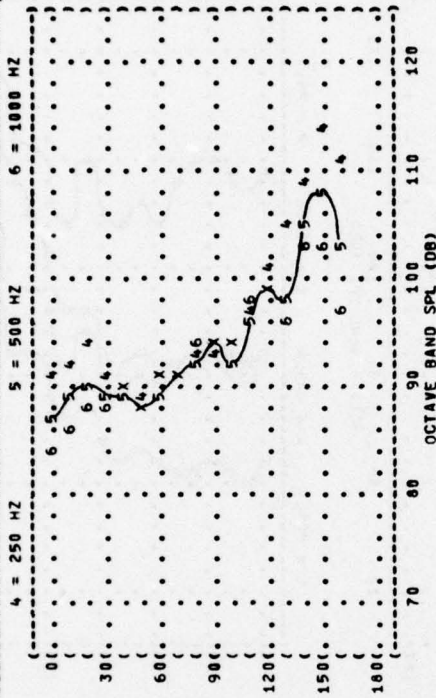
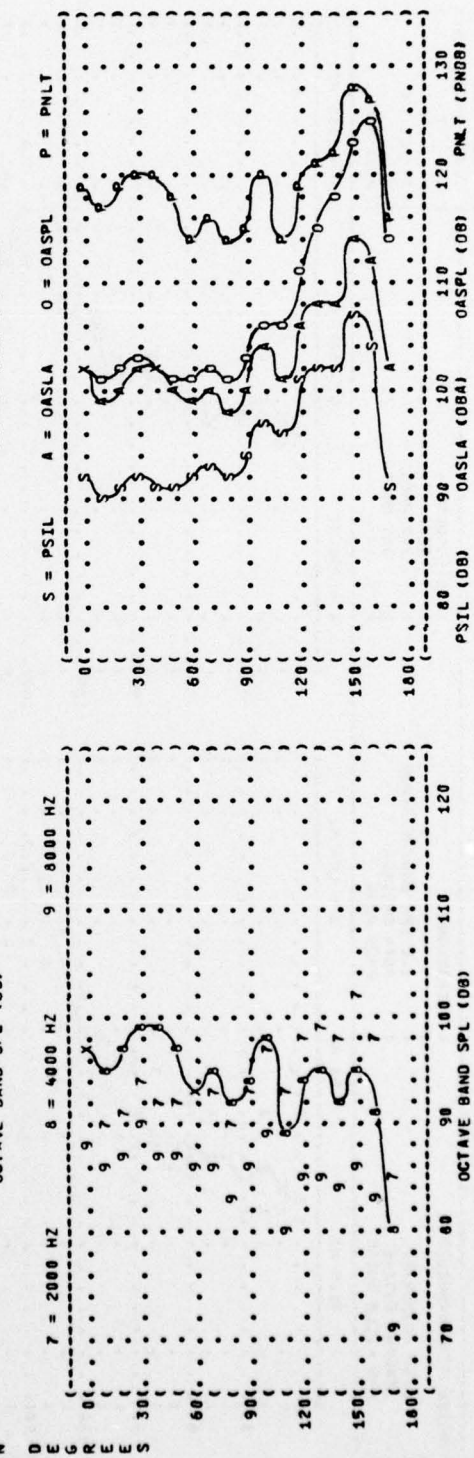
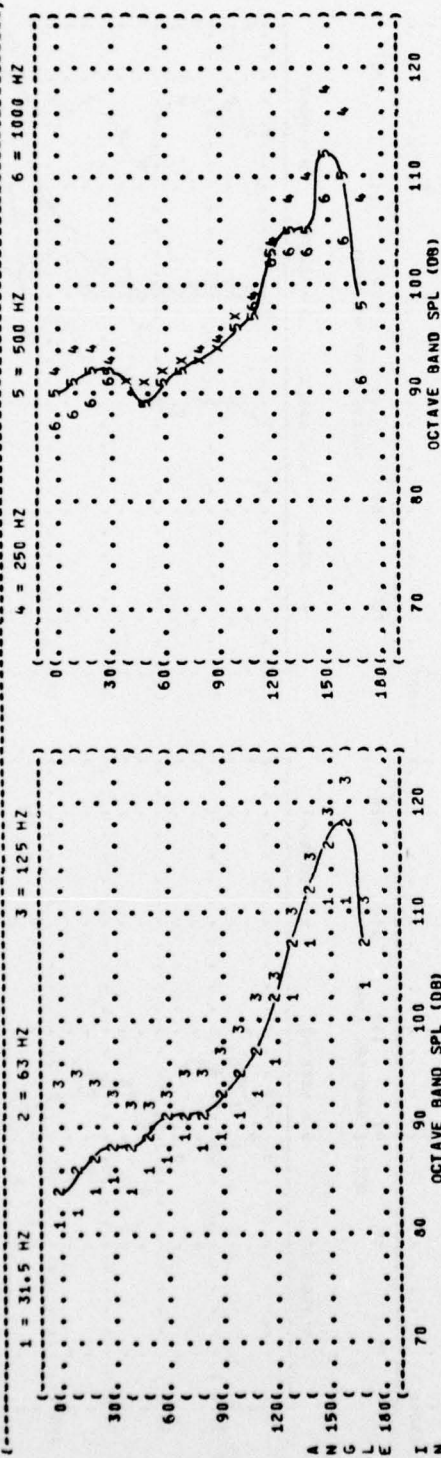


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS
 NOISE SOURCE/SUBJECT: C-9A AIRCRAFT
 J1A0-9A ENGINE
 FAR FIELD NOISE
 OPERATION: 1.7 EPR ENGINE RUNUP
 BOTH ENGINES
 FREE FLOW
 METEOROLOGY: TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 IDENTIFICATION: OMEGA 1.4
 TEST 75-002-015
 RUN 02
 29 OCT 75
 PAGE 6



) IDENTIFICATION:) OMEGA 1.4
) TEST 75-002-015
) RUN 03
) METEOROLOGY:) TEMP = 15 C
) BAR PRESS = .760 M HG
) REL HUMID = 70 %
) 29 OCT 75
) PAGE 6



) NOISE SOURCE/SUBJECT:) OPERATIONS:)
) C-9A AIRCRAFT) 1.4 EPR ENGINE RUNUP)
) JT80-9A ENGINE) BOTH ENGINES)
) FAR FIELD NOISE) FREE FLOW)

FIGURE: NORMALIZED FARFIELD NOISE LEVELS

FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:

C-9A AIRCRAFT
 JT80-9A ENGINE
 FAR FIELD NOISE

OPERATIONS:

TAKEOFF POWER, 2.0 EPR
 BOTH ENGINES
 FREE FLOW

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 H HG
 REL HUMID = 70 %

IDENTIFICATION:

OMEGA 1.4
 TEST 75-002-015
 RUN 04
 29 OCT 75
 PAGE 6

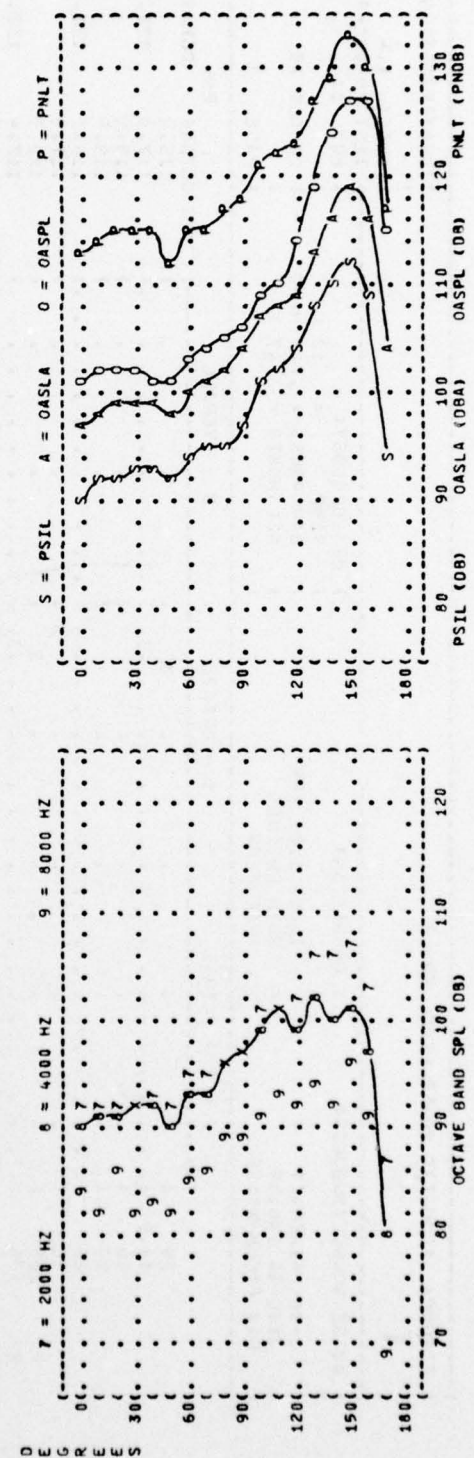
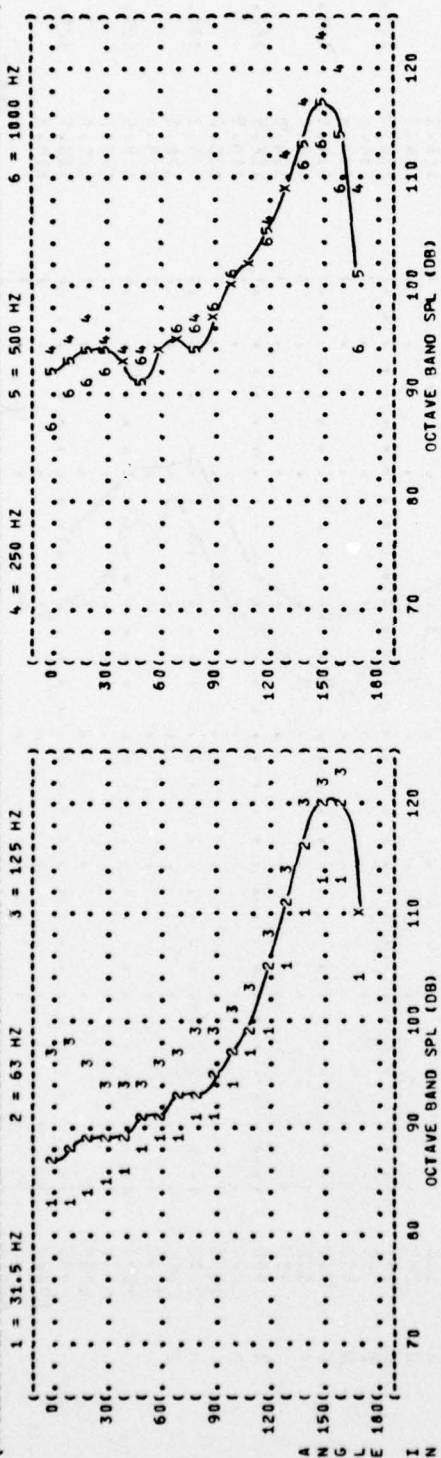


FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-015

RUN 01

29 OCT 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATION:

C-9A AIRCRAFT

JT8D-9A ENGINE

FAR FIELD NOISE

METEOROLOGY:

TEMP = 13 C

BAR PRESS = .742 M HG

REL HUMID = 47 %

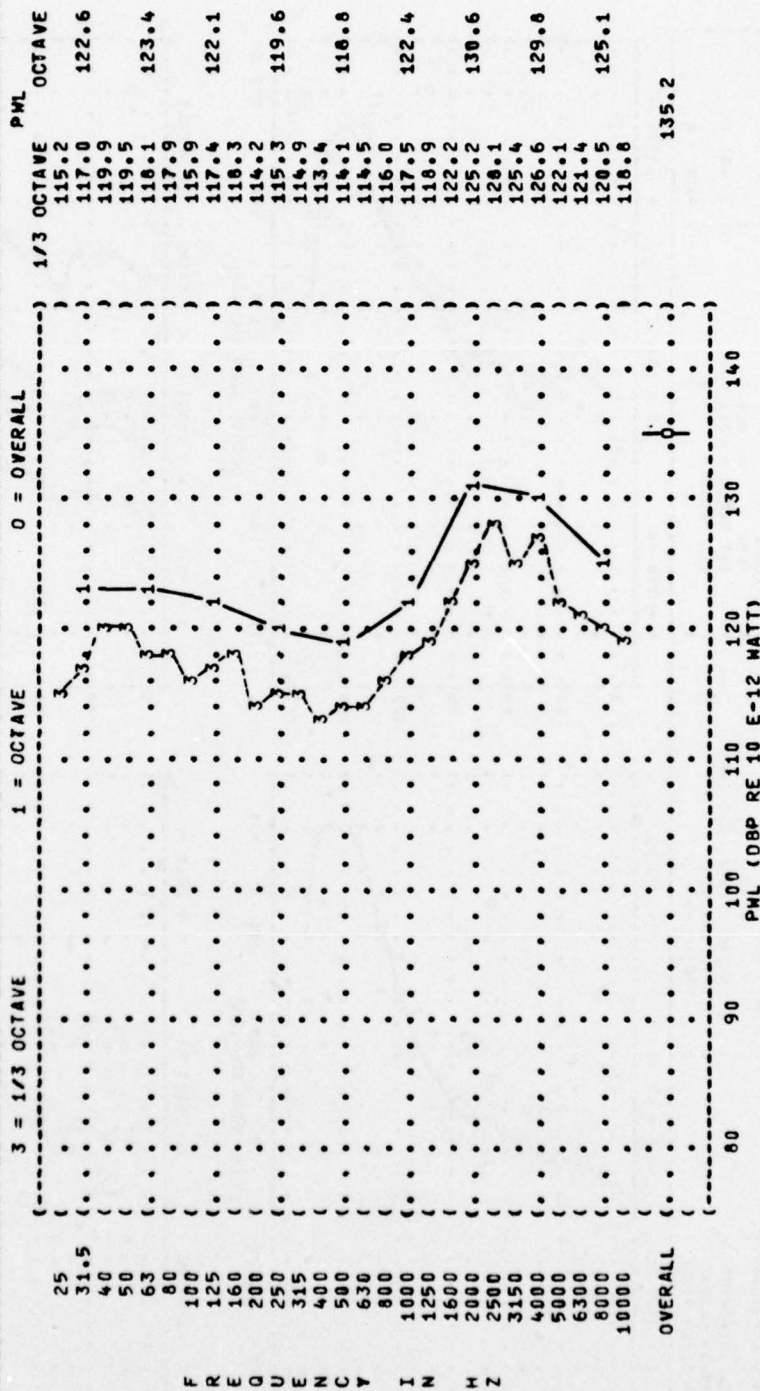


FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION: OMEGA 1.4

TEST 75-002-015

RUN 02

29 OCT 75

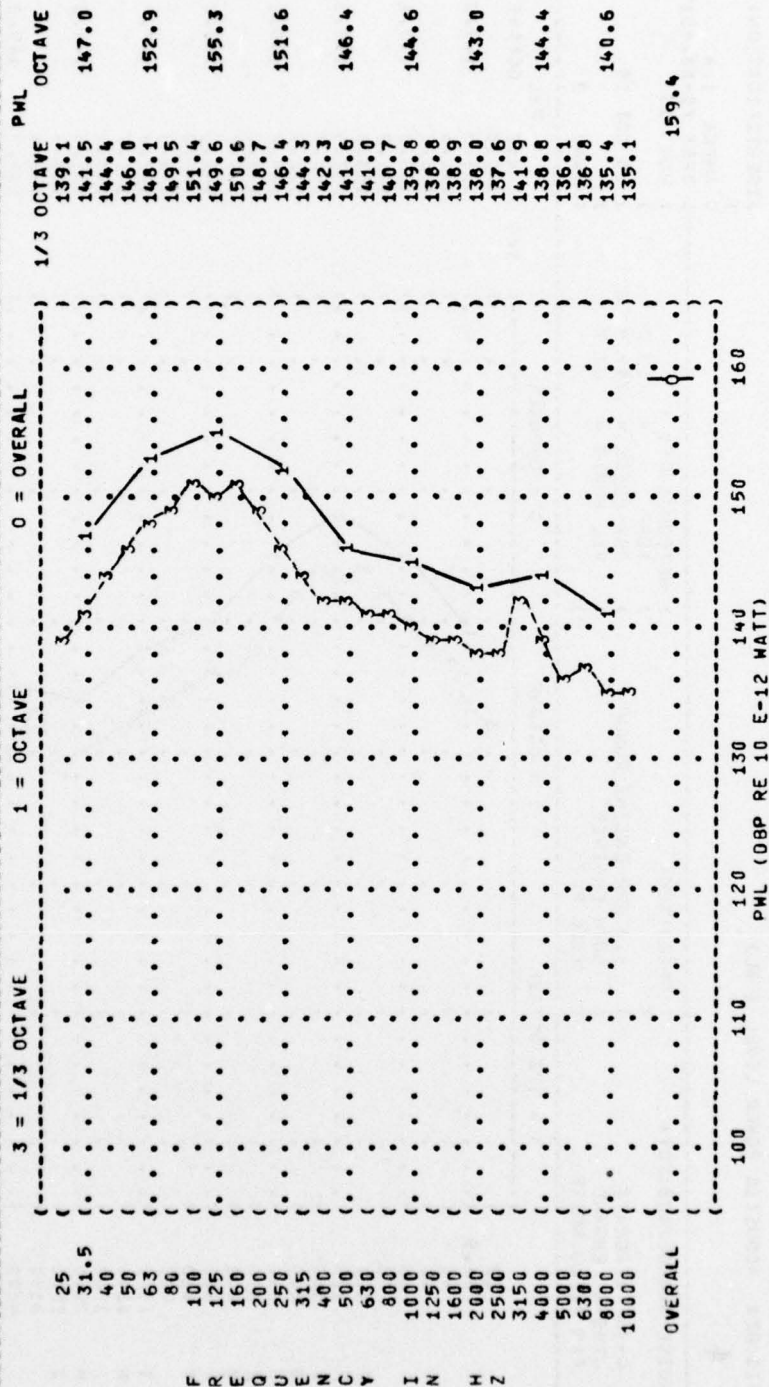
PAGE 3

NOISE SOURCE/SUBJECT: OPERATION: METEOROLOGY: TEMP = 13 C

C-9A AIRCRAFT 1.7 EPR ENGINE RUNUP BAR PRESS = .742 M HG

JT8D-9A ENGINE BOTH ENGINES REL HUMID = 47 %

FAR FIELD NOISE FREE FLOW



F R E Q U E N C Y I N H Z

FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-015

RUN 03

29 OCT 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATION:

METEOROLOGY:

TEMP = 13 C

1.0 EPR ENGINE RUNUP

BOTH ENGINES

BAR PRESS = .742 M HG

FREE FLOW

REL HUMID = 47 %

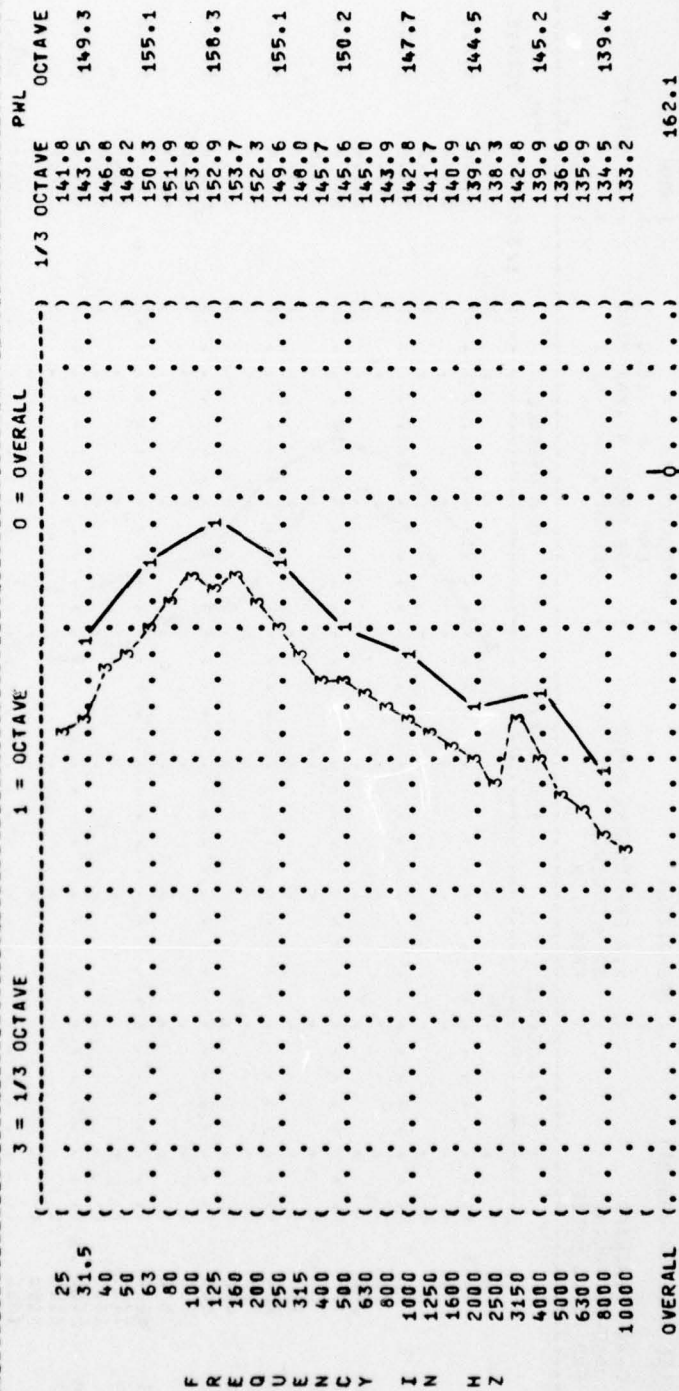


FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATIONS:

OMEGA 1.4

TEST 75-002-015

RUN 04

29 OCT 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATIONS:

C-9A AIRCRAFT

JT8D-9A ENGINE

FAR FIELD NOISE

METEOROLOGY:

TEMP = 13 C

BAR PRESS = .742 M HG

REL HUMID = 47 %

FREE FLOW

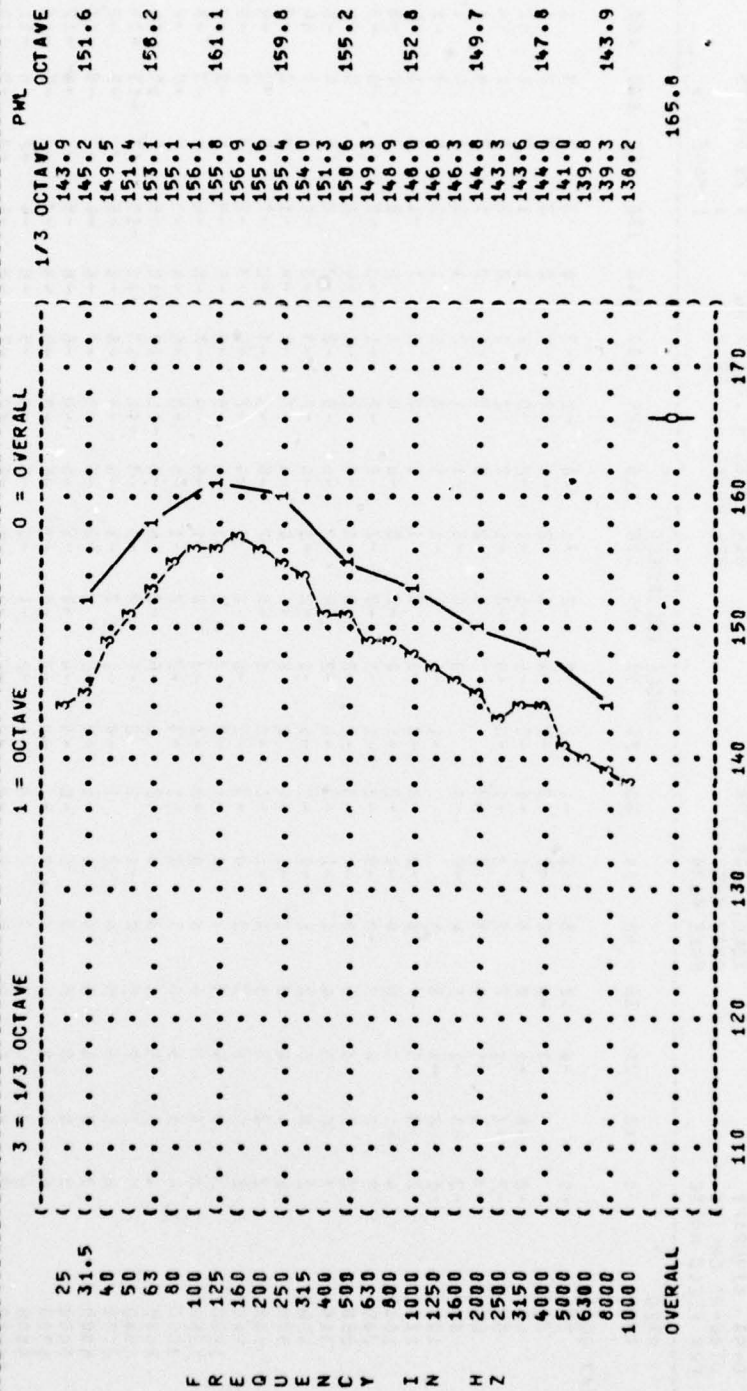


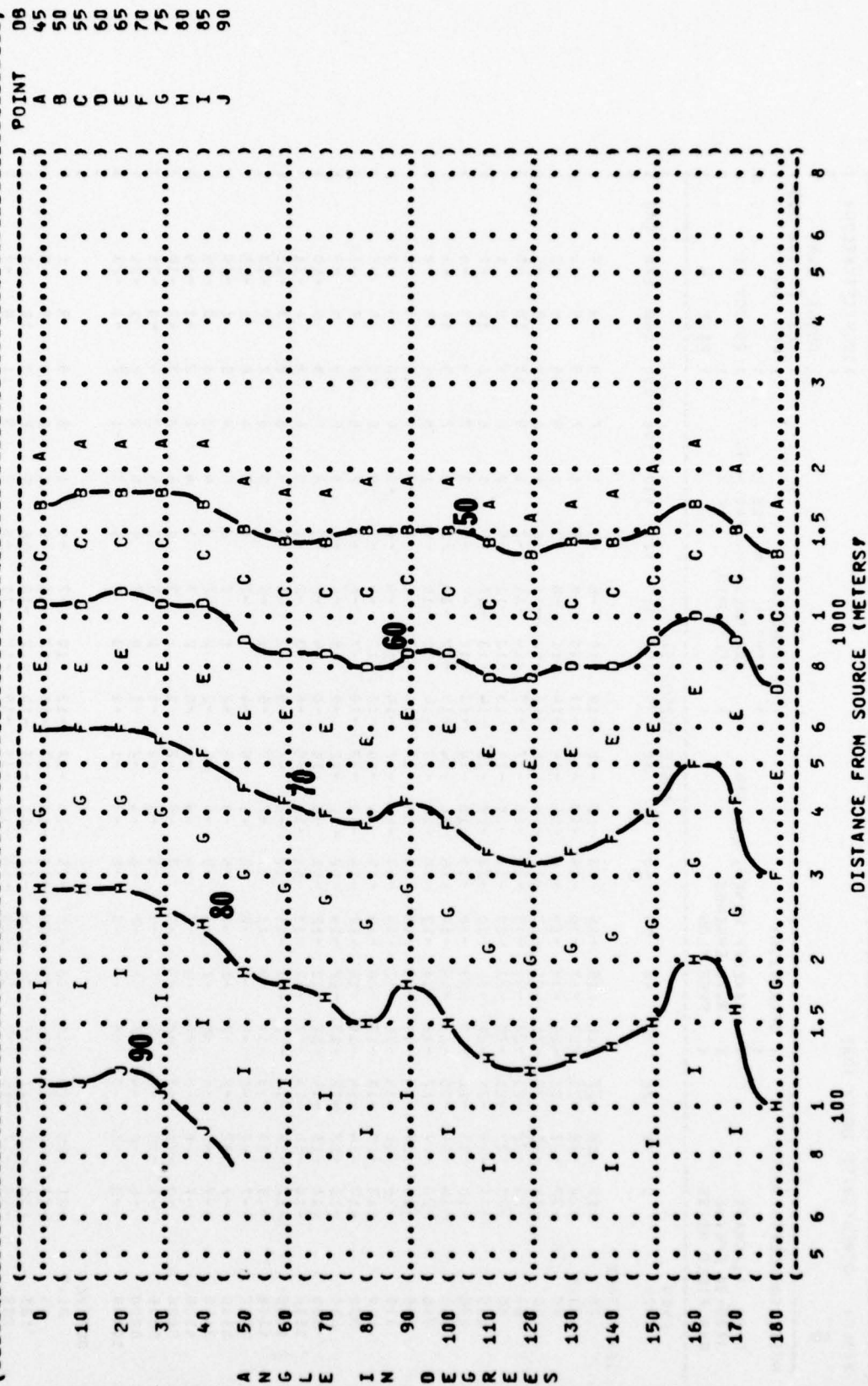
TABLE: DIRECTIVITY INDEX (DB)																
IDENTIFICATIONS:																
6																
NOISE SOURCE/SUBJECT:																
C-9A AIRCRAFT																
JTB0-9A ENGINE																
FAR FIELD NOISE																
OPERATION:																
IDLE, 1.05 EPR																
BOTH ENGINES																
FREE FLOW																
METEOROLOGY:																
TEMP = 13 C																
BAR PRESS = .742 M HG																
REL HUMID = 47 %																
PAGE 4																
FREQ (HZ)																
ANGLE (DEGREES)																
1/3 OCTAVE																
25	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
31.5	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
40	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
50	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
63	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
80	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
100	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
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200	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
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315	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
400	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
500	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
630	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
800	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
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1600	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
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10000	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
OCTAVE																
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63	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
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250	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
500	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1000	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2000	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
4000	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8000	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
OVERALL																
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

TABLE: DIRECTIVITY INDEX (DB)																
IDENTIFICATION:																
6																
NOISE SOURCE/SUBJECT:																
C-9A AIRCRAFT																
JT8D-9A ENGINE																
FAR FIELD NOISE																
FREQ (HZ)																
ANGLE (DEGREES)																
1/3 OCTAVE																
25	-16	-15	-14	-14	-13	-13	-12	-8	-9	-9	-9	-7	-3	1	6	9
31.5	-19	-17	-18	-17	-15	-15	-14	-12	-11	-10	-8	-7	-5	1	7	9
40	-17	-17	-17	-17	-15	-14	-12	-14	-10	-12	-11	-8	-5	0	7	9
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5000	-0	-2	-1	-0	-0	-2	-2	-3	1	1	2	1	1	-4	1	-2
6300	0	5	2	2	3	2	-1	-3	2	-1	-1	-1	-0	-5	-1	-4
8000	1	-0	1	1	1	-0	-1	-2	3	1	1	-0	-0	-4	-0	-2
10000	1	1	3	3	3	-0	1	-3	-2	-2	-2	-3	-0	-5	-2	-7
OCTAVE																
31.5	-17	-16	-16	-16	-15	-14	-13	-12	-10	-11	-9	-7	-5	1	7	9
63	-21	-20	-19	-19	-17	-17	-16	-16	-15	-13	-12	-9	-6	0	6	8
125	-15	-14	-15	-17	-17	-16	-14	-14	-12	-11	-11	-8	-5	1	7	9
250	-13	-11	-10	-13	-14	-14	-13	-12	-11	-11	-9	-6	-3	1	5	11
500	-11	-9	-8	-9	-10	-11	-8	-6	-5	-5	-6	-2	0	-0	6	7
1000	-12	-10	-9	-8	-7	-8	-6	-6	-3	-2	-2	1	2	-0	6	7
2000	-2	-2	-1	-1	-2	-3	-3	-3	-1	-2	0	3	3	-1	4	2
4000	-1	-1	2	2	2	2	1	-4	1	1	1	-0	-1	-4	-1	-3
8000	1	3	2	2	3	1	-0	-3	2	-0	-0	-1	-0	-5	-1	-4
OVERALL																
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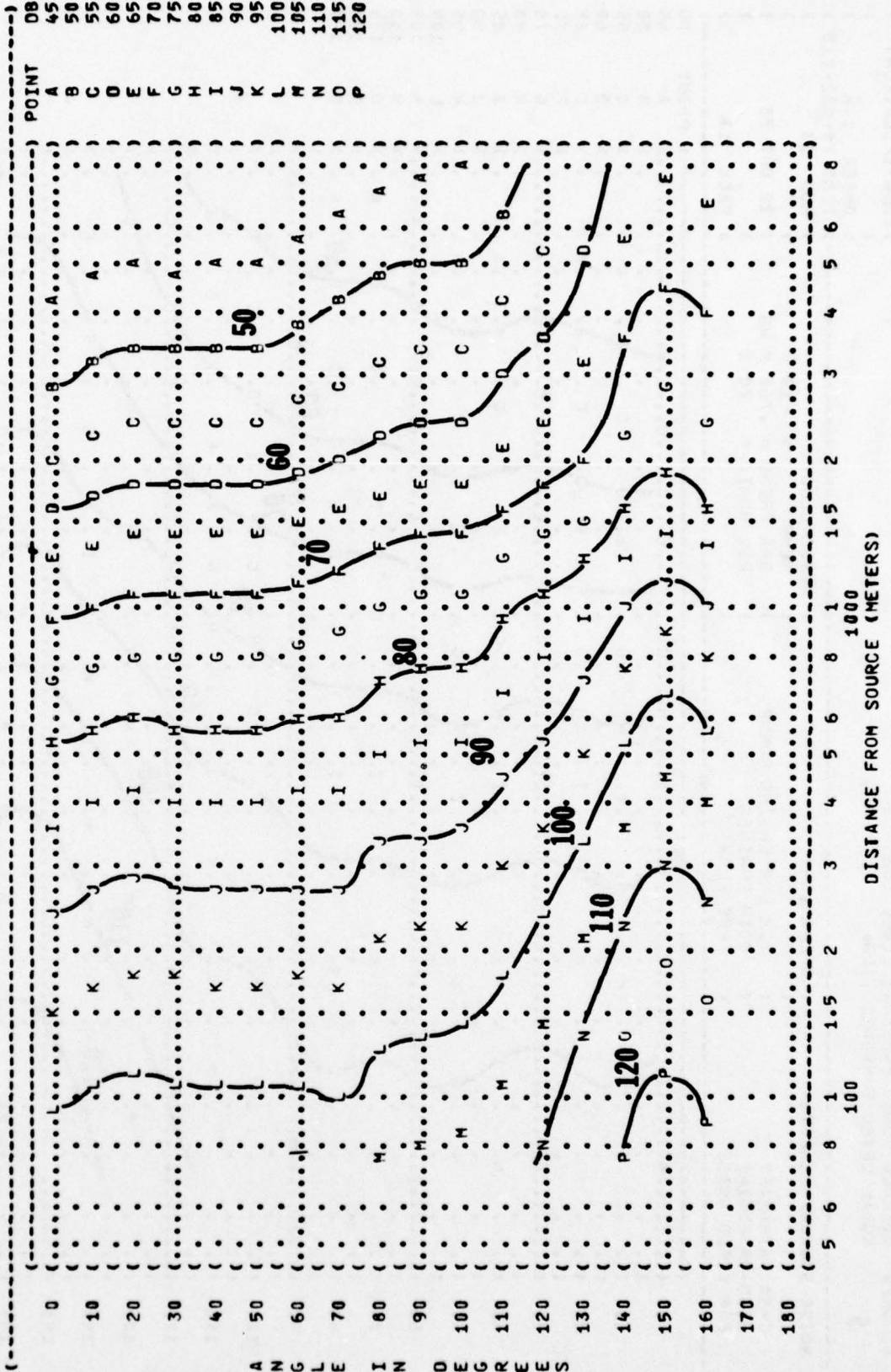
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6																	OMEGA 1.4	
																	TEST 75-002-015	
																	RUN 03	

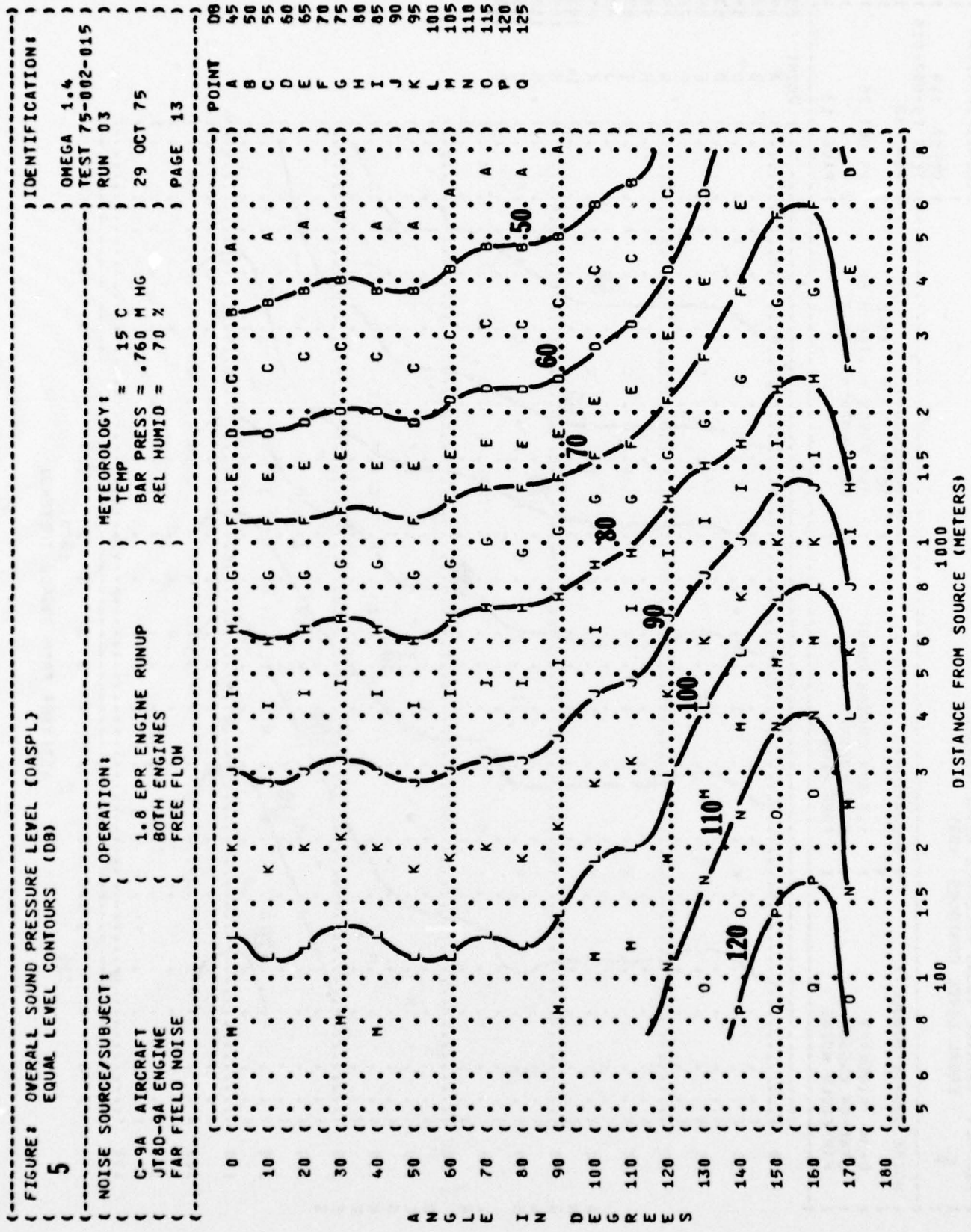
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6																
NOISE SOURCE/SUBJECT:																
(OPERATION:																
(TAKEOFF POWER, 2.0 EPR																
(BOTH ENGINES																
(FREE FLOW																
METEOROLOGY: = 13 C																
TEMP																
BAR PRESS = .742 M HG																
REL HUMID = 47 %																
PAGE 4																
IDENTIFICATION:																
OMEGA 1.4																
TEST 75-002-015																
RUN 04																
29 OCT 75																
FREQ																
(M2)																
ANGLE (DEGREES)																
1/3 OCTAVE																
25																
31.5																
40																
50																
63																
80																
100																
125																
160																
200																
250																
315																
400																
500																
630																
800																
1000																
1250																
1600																
2000																
2500																
3150																
4000																
5000																
6300																
8000																
10000																
OCTAVE																
31.5																
63																
125																
250																
500																
1000																
2000																
4000																
8000																
OVERALL																


```
(-----)
( FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL) ) IDENTIFICATION:
( EQUAL LEVEL CONTOURS (DB) ) )
( 5 ) OMEGA 1.4
( ) TEST 75-002-015
( NOISE SOURCE/SUBJECT: ) METEOROLOGY:
( ) OPERATION: ) TEMP = 15 C
( C-9A AIRCRAFT ) IDLE, 1.05 EPR ) BAR PRESS = .760 M HG
( JT8D-9A ENGINE ) BOTH ENGINES ) REL HUMID = 70 %
( FAR FIELD NOISE ) FREE FLOW ) PAGE 13
(-----)
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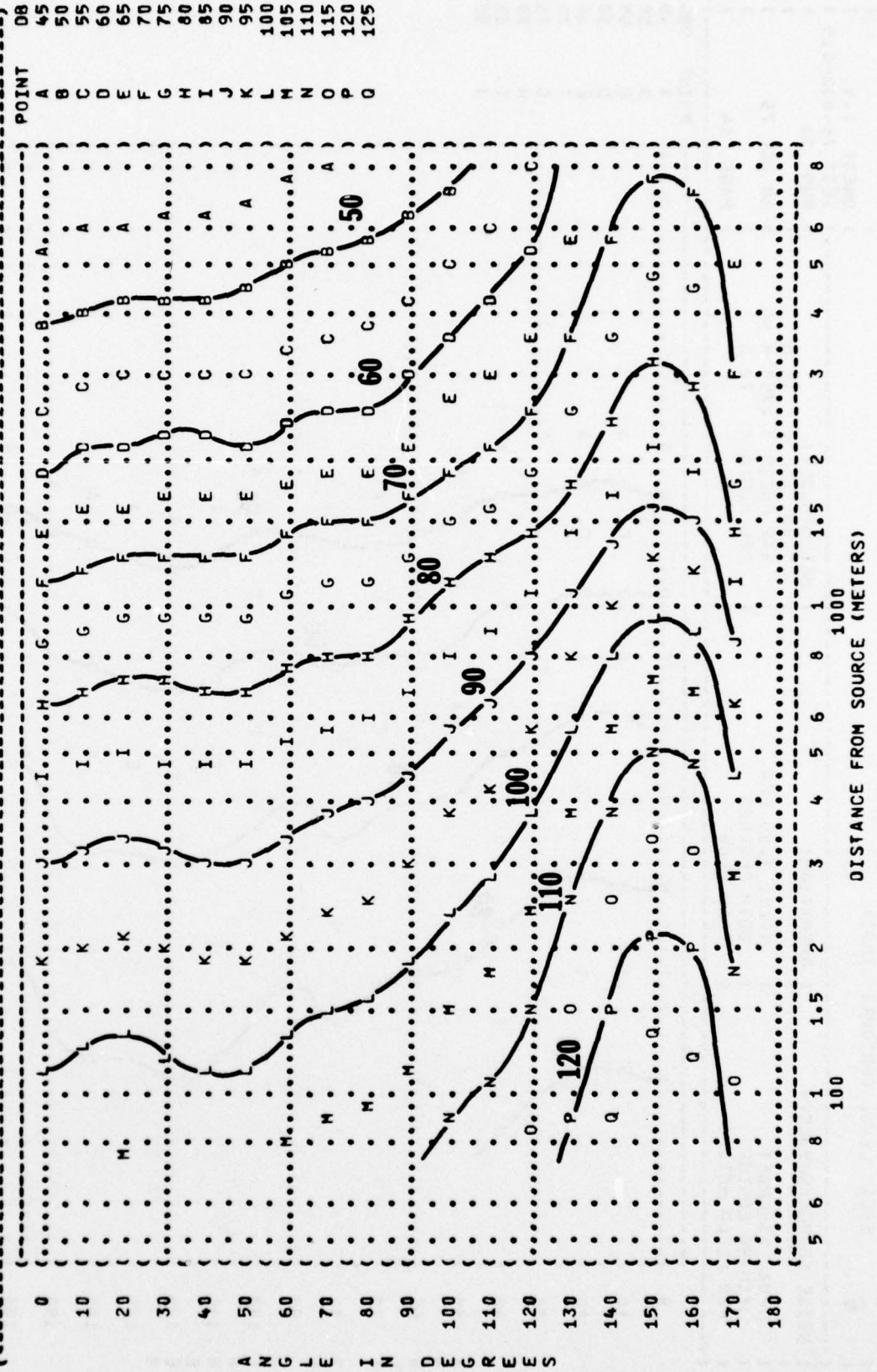


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(-----)
( FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL) ) IDENTIFICATION# :
(    5      EQUAL LEVEL CONTOURS   (DB)        ) OMEGA     1.4       )
(-----)
( NOISE SOURCE/SUBJECT:             ) OPERATION:          METEOROLOGY:         )
(                                     ) C-9A AIRCRAFT           TEMP = 15 C            )
(                                     ) JT80-9A ENGINE          BAR PRESS = .760 M HG    )
(                                     ) FAR FIELD NOISE        REL HUMID = 70 %      )
(                                     ) FREE FLOW                )
(-----)
( TEST 75-002-015 ) RUN 02              PAGE 13
```





(FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL))
 (5)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (J180-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (TAKEOFF POWER, 2.0 EPR)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 04)
 (29 OCT 75)
 (PAGE 13)



((FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)))
 ((6 EQUAL LEVEL CONTOURS (OBC)))
 ((NOISE SOURCE/SUBJECT:))
 ((C-9A AIRCRAFT))
 ((JT80-9A ENGINE))
 ((FAR FIELD NOISE))
 ((OPERATION:))
 ((1.7 EPR ENGINE RUNUP))
 ((BOTH ENGINES))
 ((FREE FLOW))
 ((METEOROLOGY:))
 ((TEMP = 15 C))
 ((BAR PRESS = .760 M HG))
 ((REL HUMID = 70 %))
 ((OMEGA 1.4))
 ((TEST 75-002-015))
 ((RUN 02))
 ((29 OCT 75))
 ((PAGE 14))

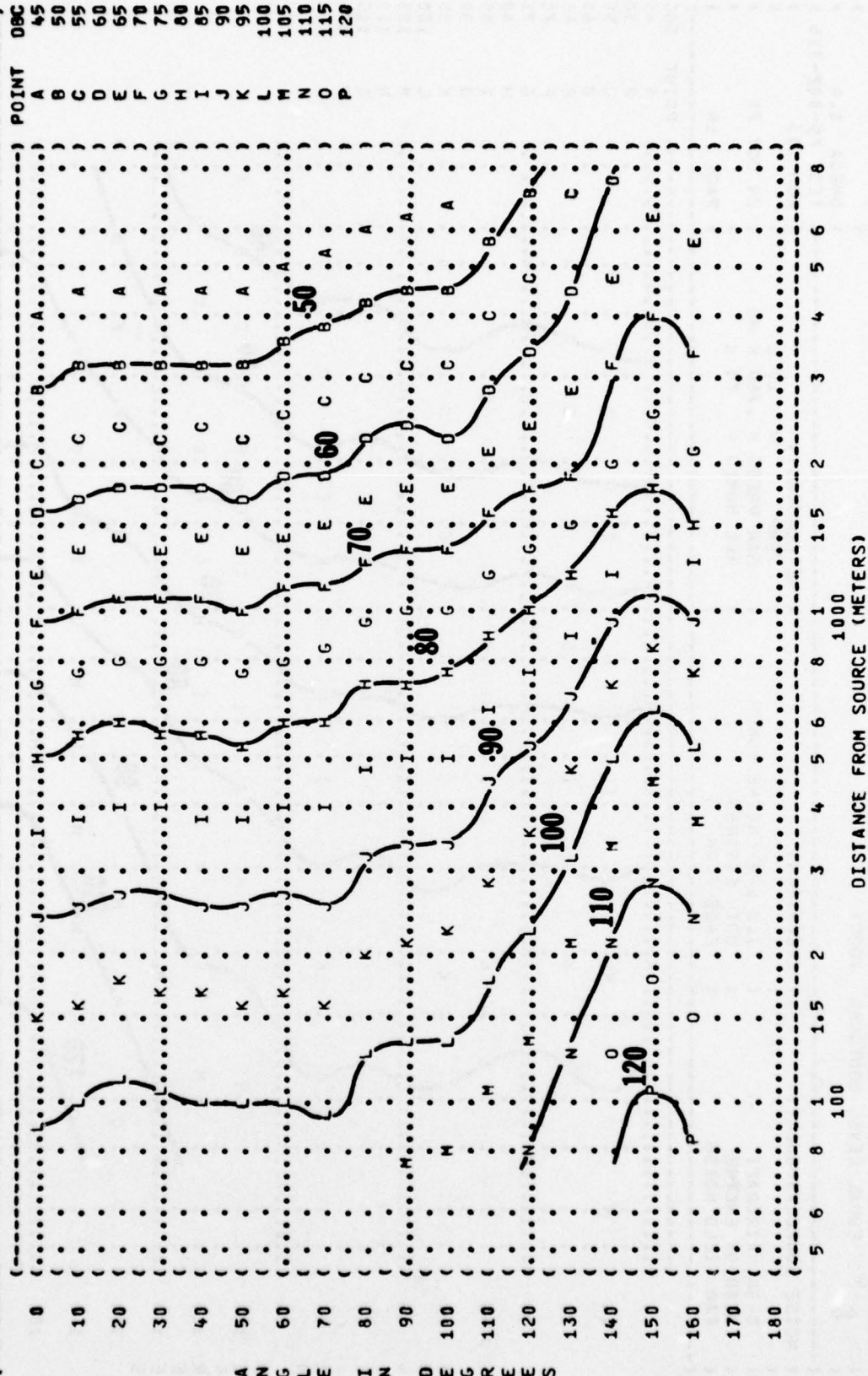
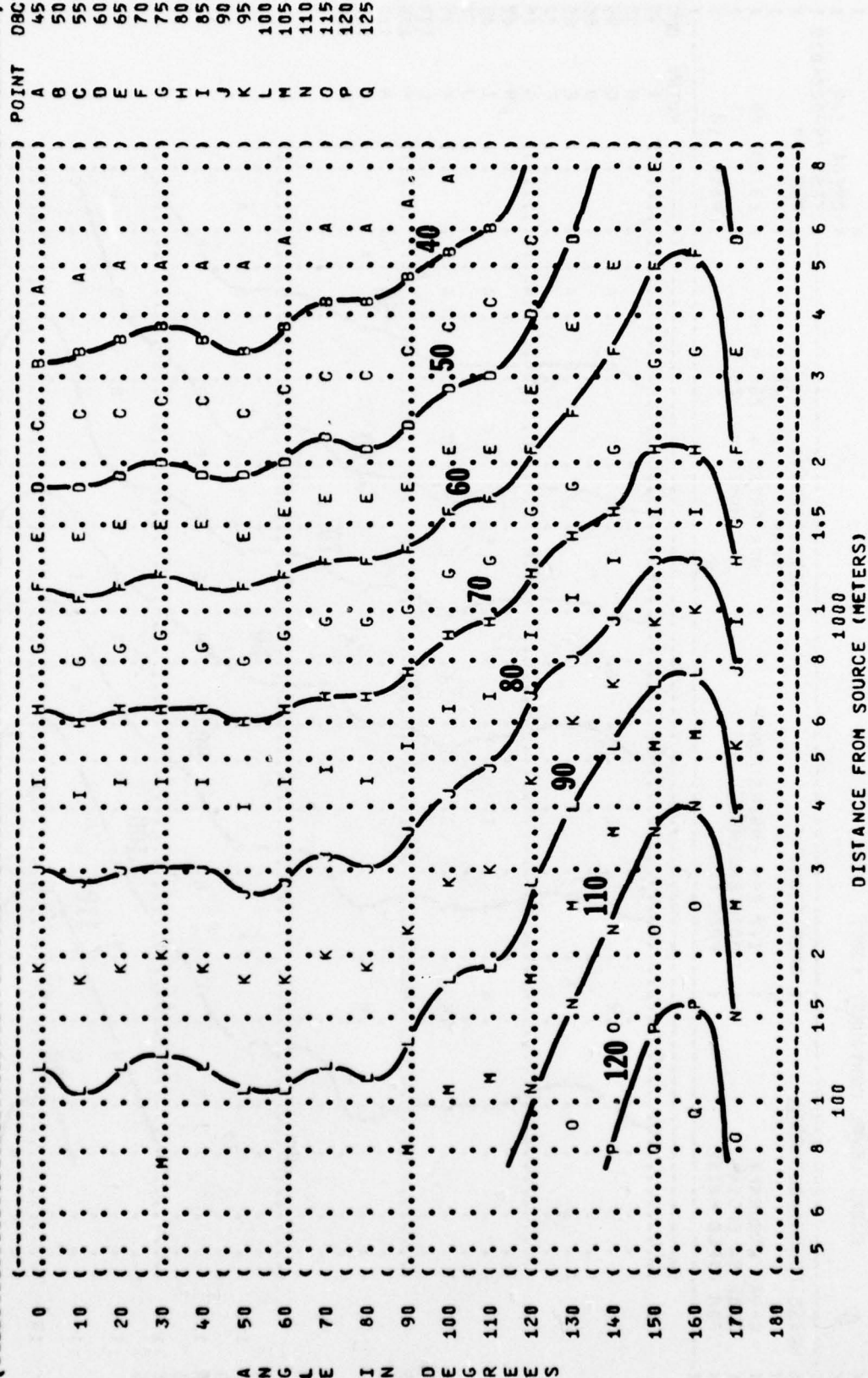


FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
 6
 IDENTIFICATION: OMEGA 1.4
 TEST 75-002-015
 RUN 03
 METEOROLOGY: TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 OPERATION: 1.8 EPR ENGINE RUNUP
 BOTH ENGINES
 FREE FLOW
 NOISE SOURCE/SUBJECT: C-9A AIRCRAFT
 JT8D-9A ENGINE
 FAR FIELD NOISE
 29 OCT 75
 PAGE 14



A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
EQUAL LEVEL CONTOURS (DBA)

IDENTIFICATION:

1

OMEGA 1.4

TEST 75-002-015

RUN 01

METEOROLOGY:

MP = 15 C

R PRESS = .760 M HG

L HUMIO = 70 %

PAGE 15

(OPERATION:

—

IOLE, 1.05 EA

() BOTH ENGINES

SOURCE/SUBJECT:

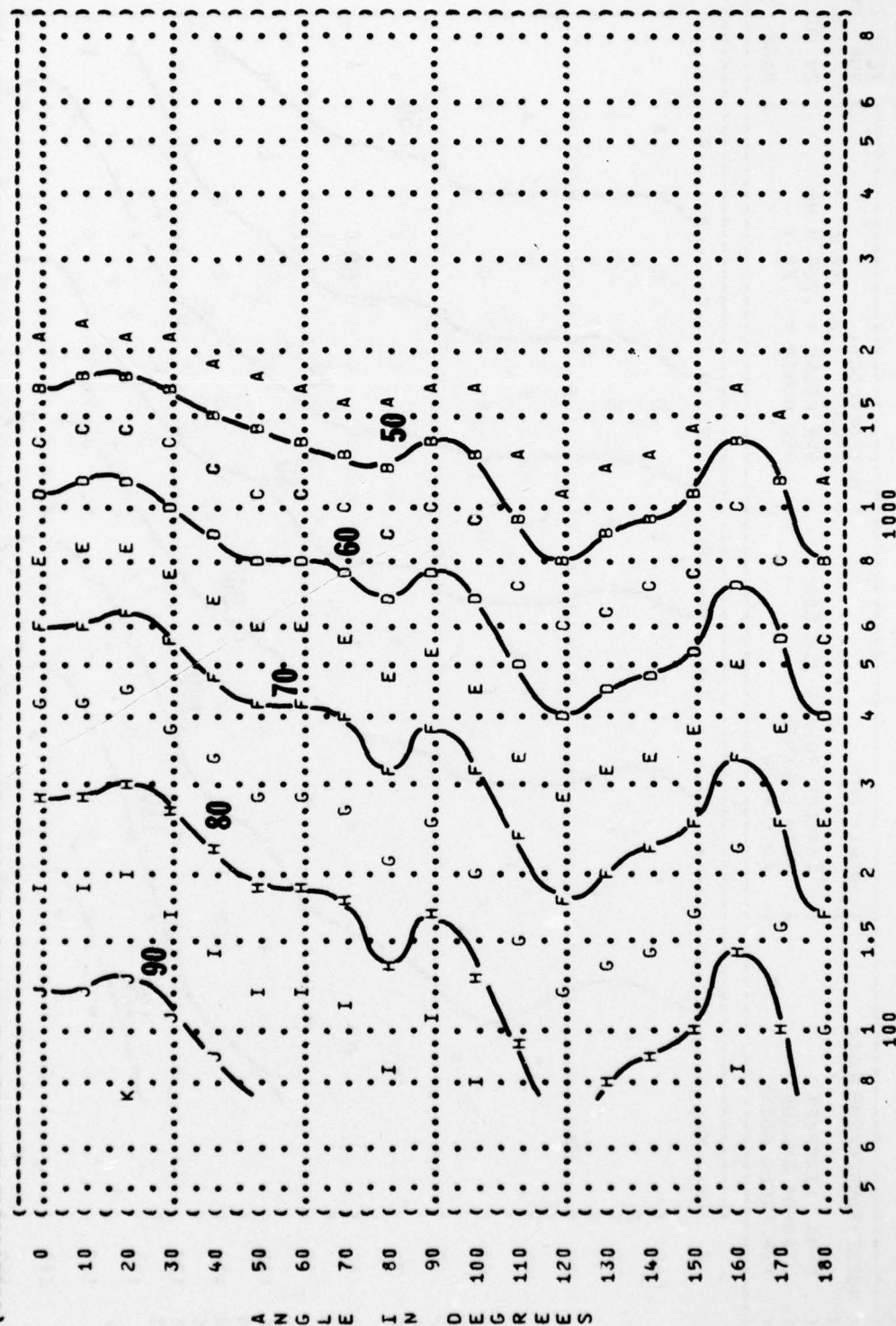
**0
0
0
-
0
0
0**

AIRCRAFT

-9A ENGINE

POINT

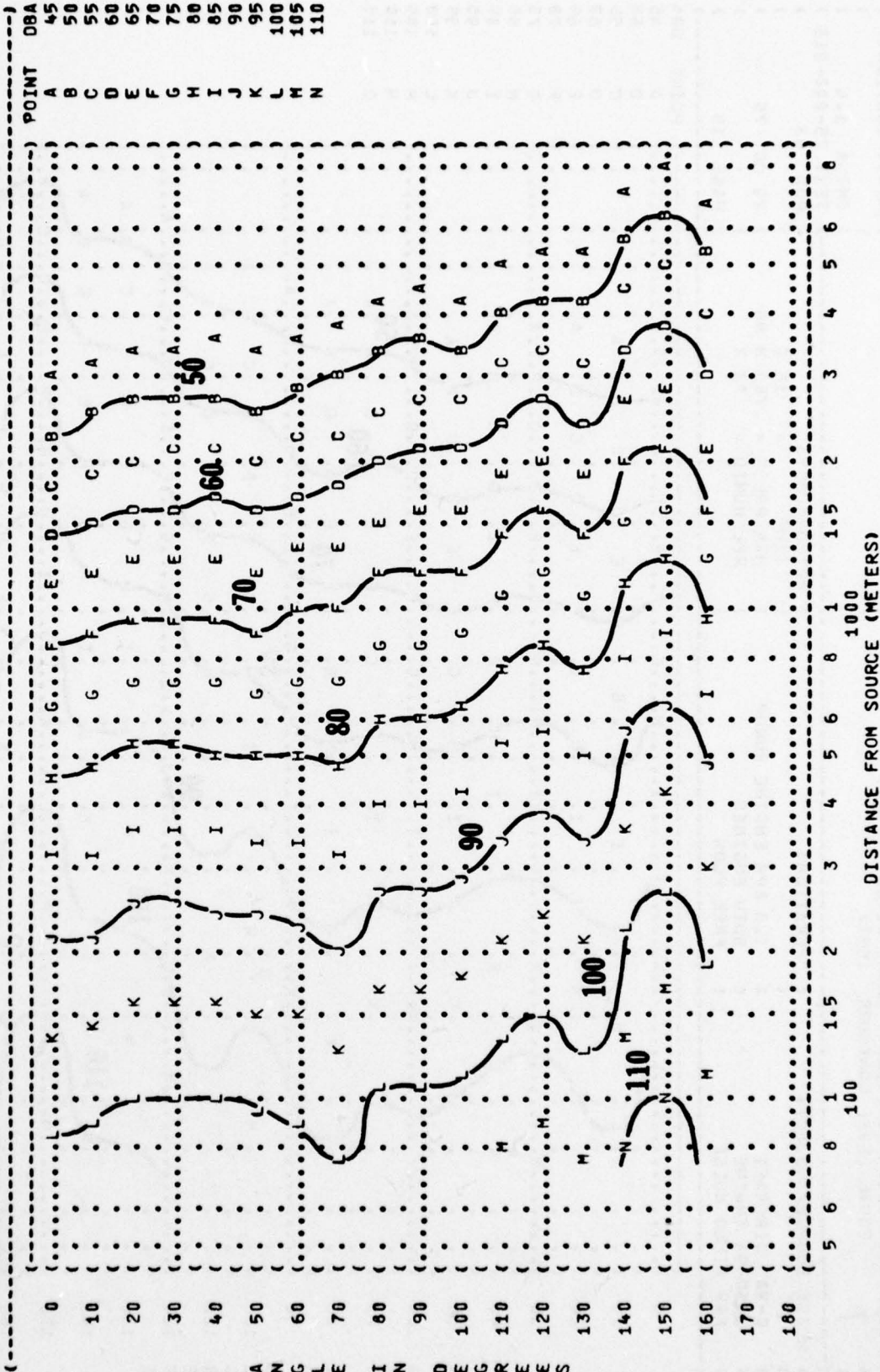
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95



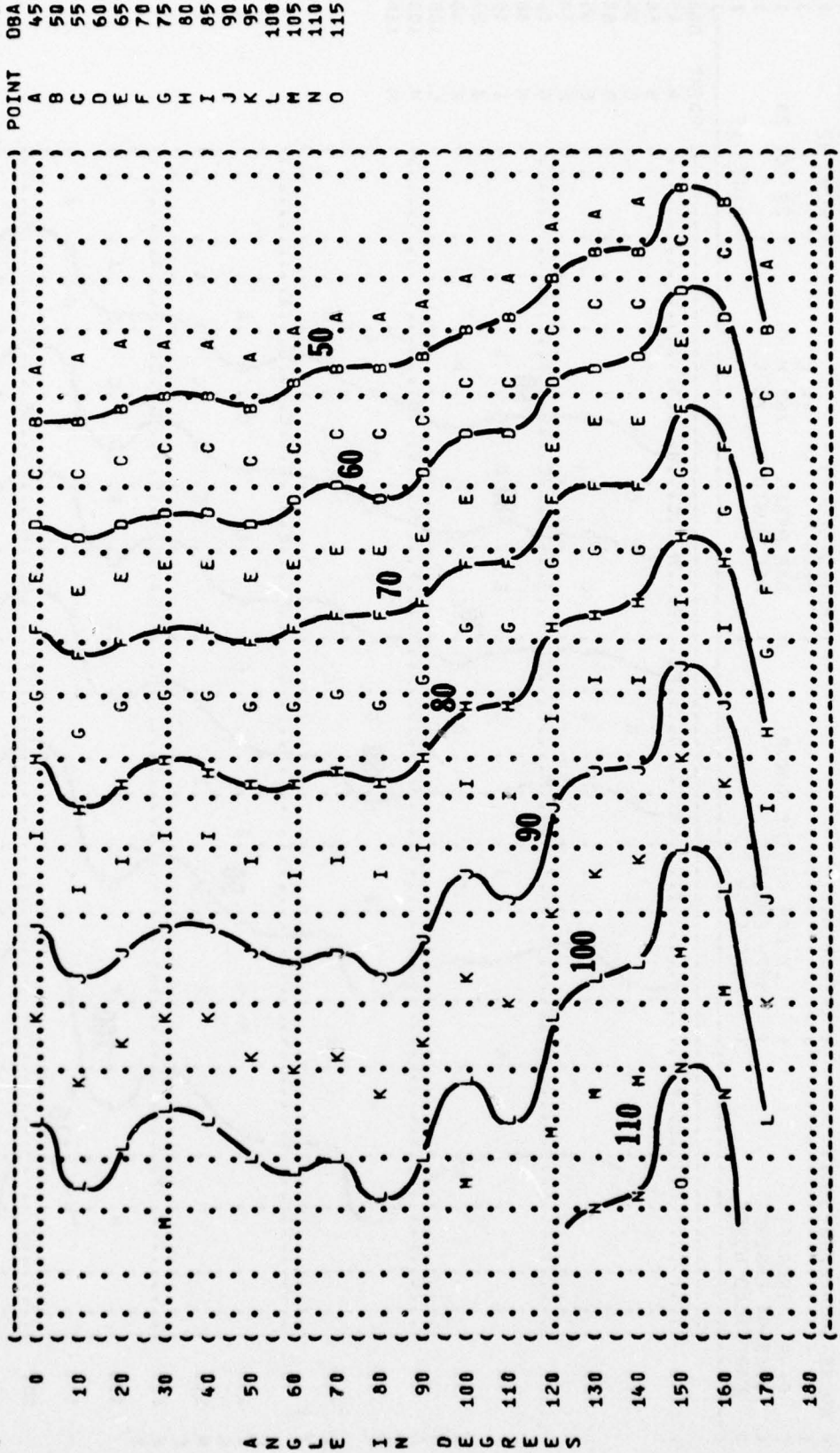
DISTANCE FROM SOURCE (METERS)

420 JW HZ OWGRWWS

(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
 (7 EQUAL LEVEL CONTOURS (DBA)
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-015
 () RUN 02
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () PAGE 15
 () NOISE SOURCE/SUBJECT:
 () OPERATION:
 () 1.7 EPR ENGINE RUNUP
 () BOTH ENGINES
 () FREE FLOW
 () C-9A AIRCRAFT
 () JT80-9A ENGINE
 () FAR FIELD NOISE

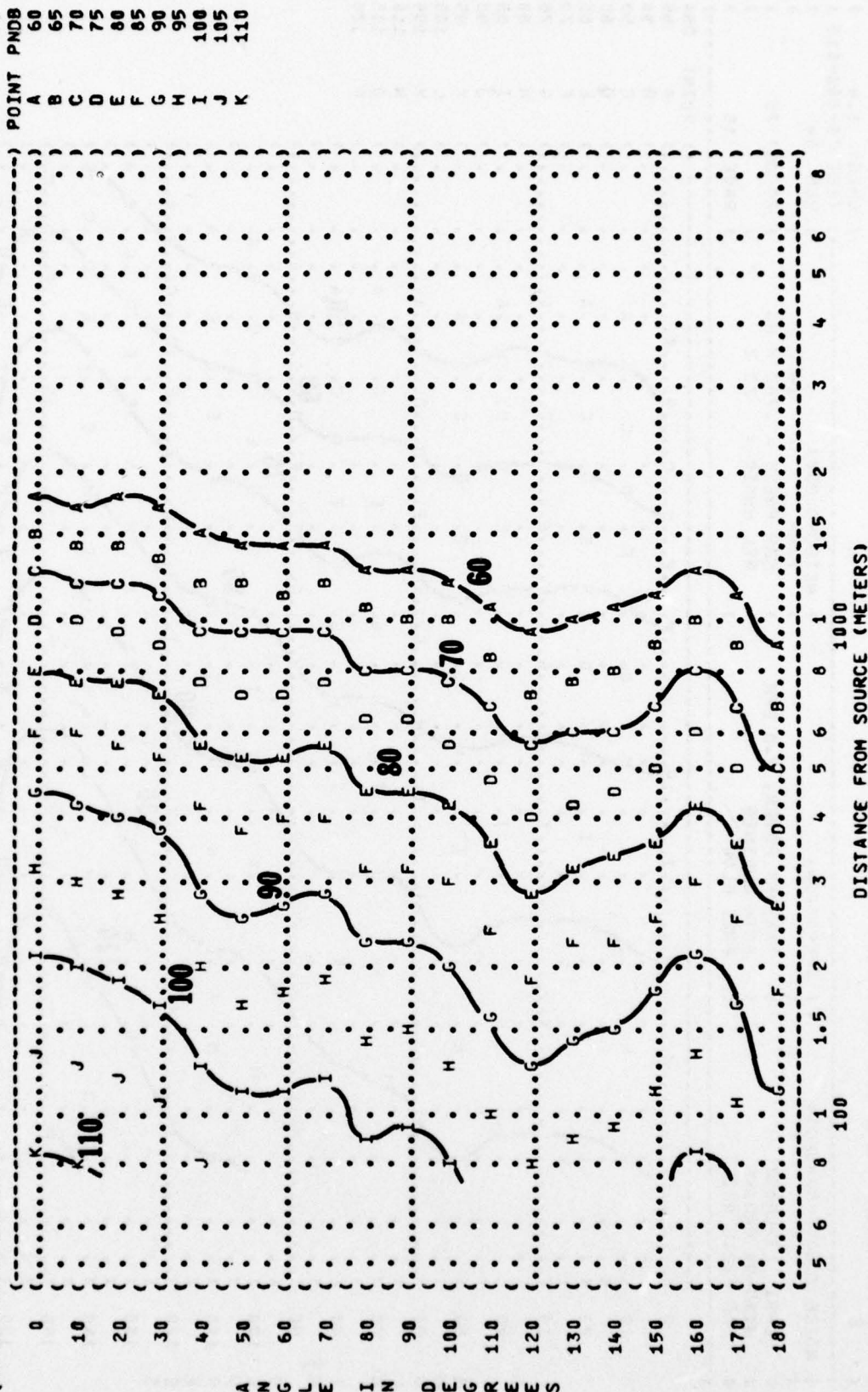


(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
 (7 EQUAL LEVEL CONTOURS (DBA)
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-015
 () RUN 03
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () 29 OCT 75
 () PAGE 15
 () NOISE SOURCE/SUBJECT:
 () OPERATION:
 () 1.8 EPR ENGINE RUNUP
 () BOTH ENGINES
 () FREE FLOW
 () C-9A AIRCRAFT
 () JT80-9A ENGINE
 () FAR FIELD NOISE

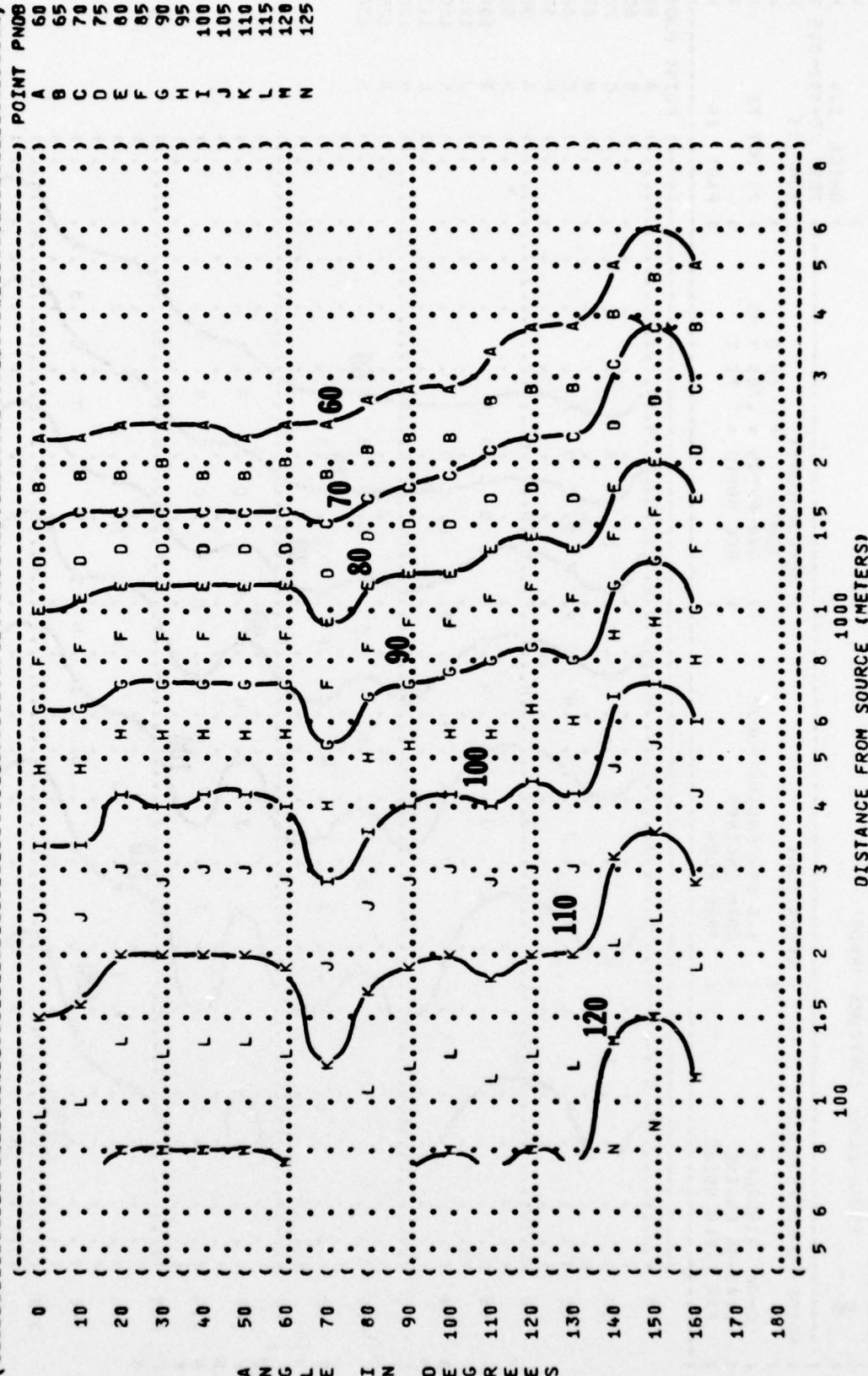


DISTANCE FROM SOURCE (METERS)

(FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)
 (8 EQUAL LEVEL CONTOURS (PNDB)
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (IDLE, 1.05 EPR
 (JT80-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (PAGE 16
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 01
 (29 OCT 75
 (POINT PNDB
 (A 60
 (B 65
 (C 70
 (D 75
 (E 80
 (F 85
 (G 90
 (H 95
 (I 100
 (J 105
 (K 110



(FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT))
 (8)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (JT80-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (1.7 EPR ENGINE RUNUP)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 02)
 (29 OCT 75)
 (PAGE 16)



IDENTIFICATIONS:

OMEGA 1-6

1) METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

PAGE 16

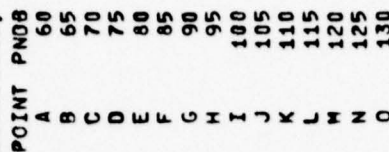


FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)
 8
 IDENTIFICATION:
 OMEGA 1.4
 TEST 75-002-015
 RUN 04
 METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 29 OCT 75
 PAGE 16

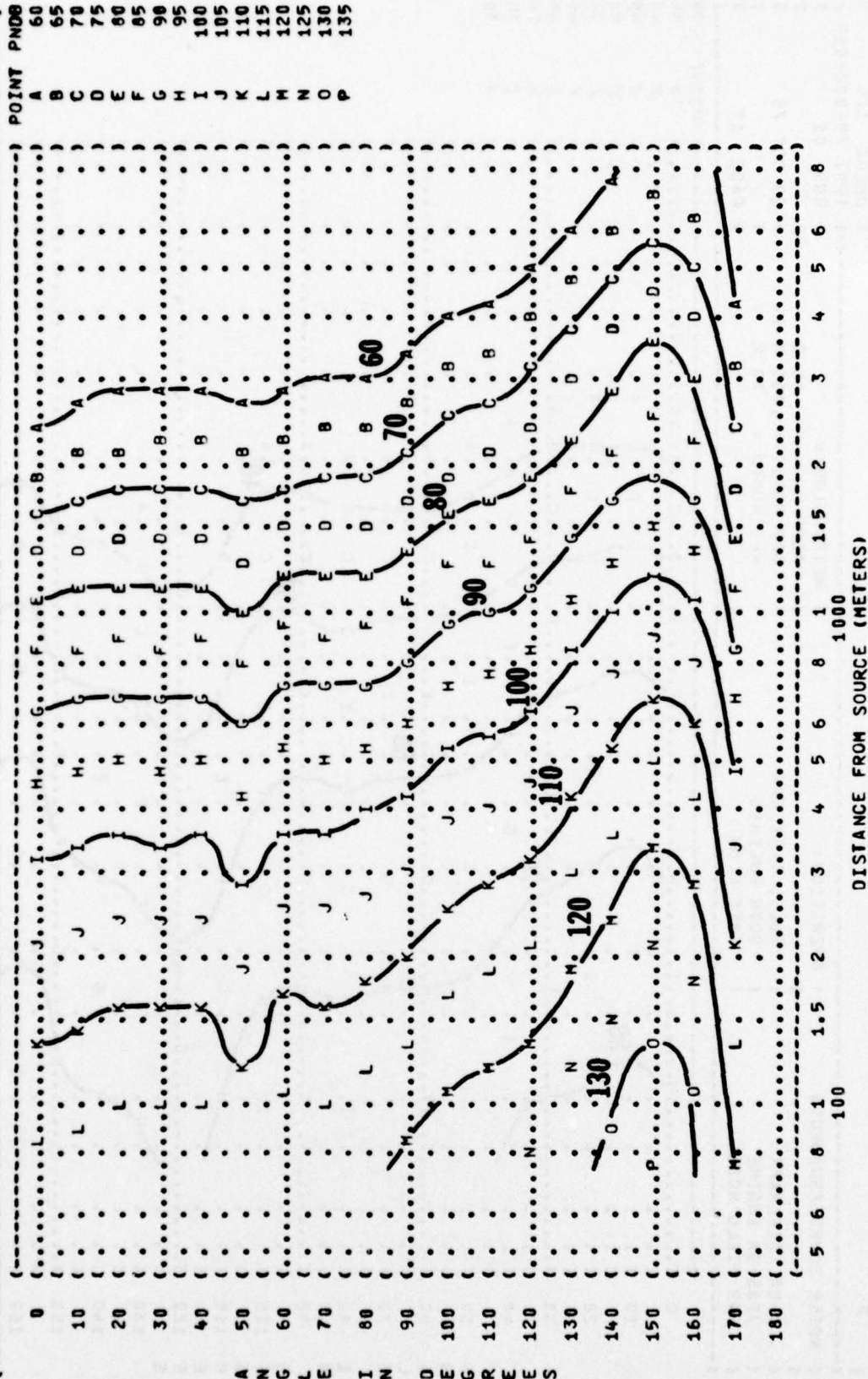
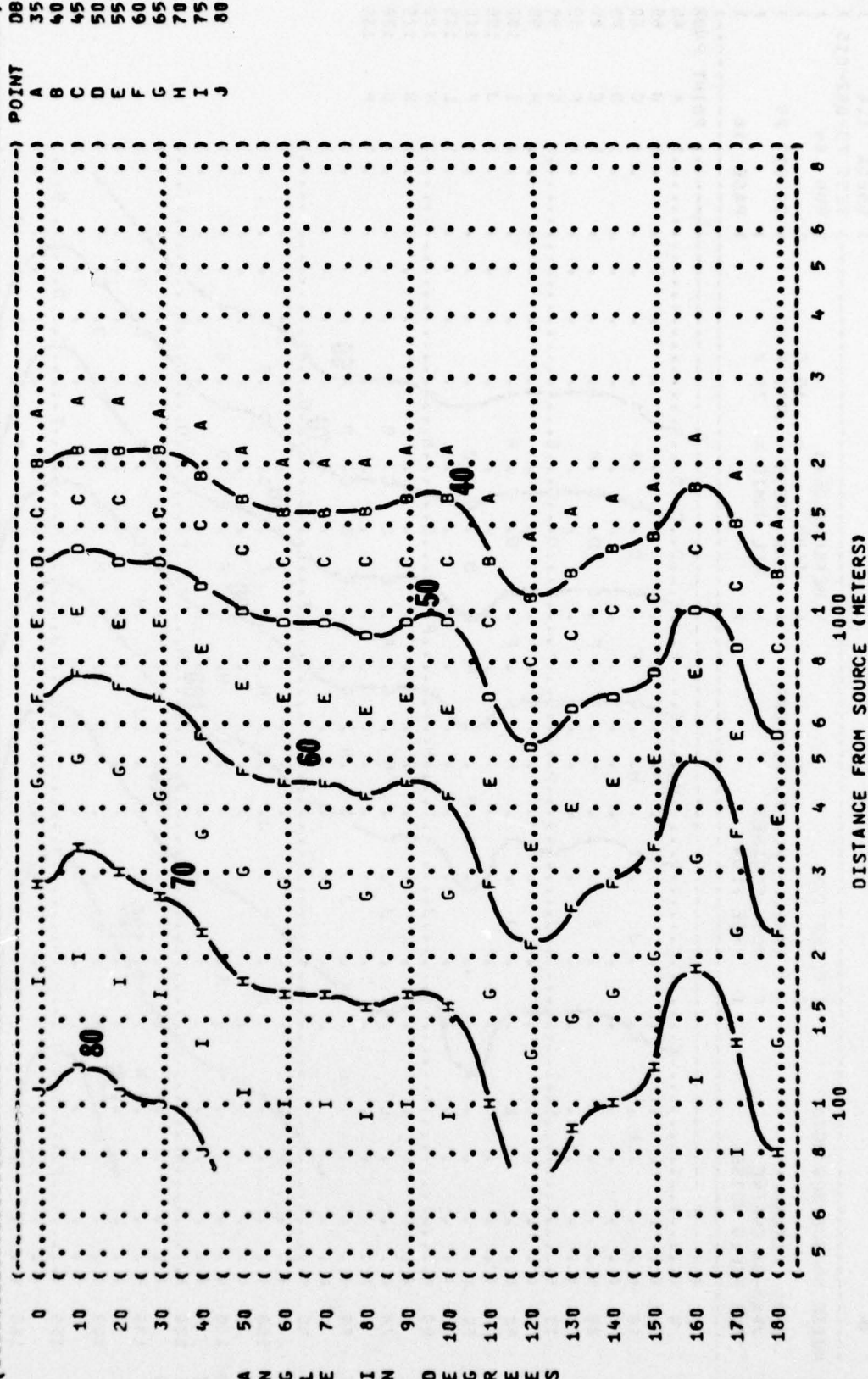


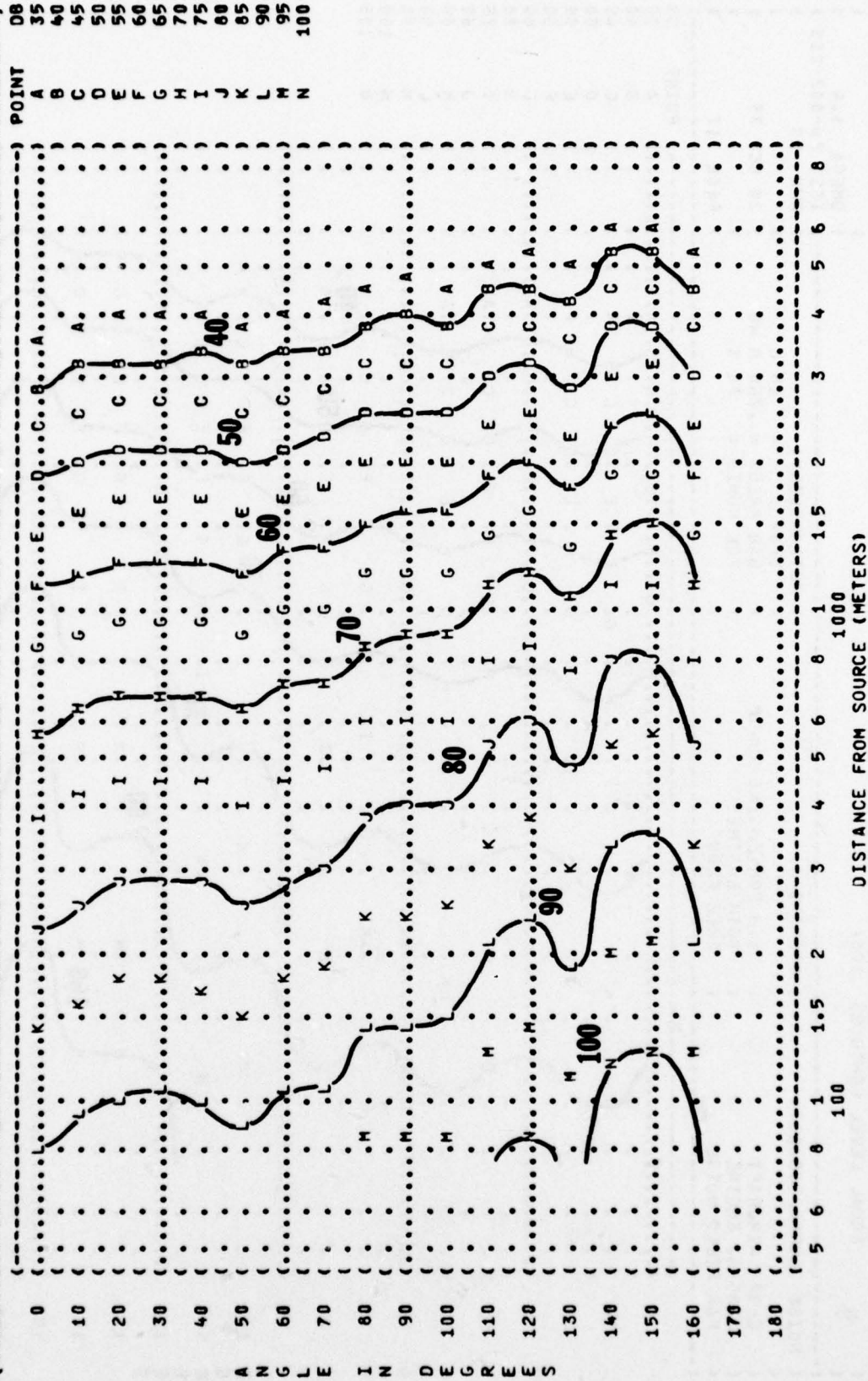
FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
 9
 IDENTIFICATION:
 OMEGA 1.4
 TEST 75-002-015
 RUN 01
 29 OCT 75
 PAGE 17

NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (((TEMP = 15 C)
 (G-9A AIRCRAFT (IDLE, 1.05 EPR) BAR PRESS = .760 M HG)
 (JT80-9A ENGINE (BOTH ENGINES) REL HUMID = 70 %)
 (FAR FIELD NOISE (FREE FLOW))



A N G L E I N D E G R E E S

(FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL))
 (9)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (J780-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (1.7 EPR ENGINE RUNUP)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 02)
 (29 OCT 75)
 (PAGE 17)



(FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL))
 (9)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (JT80-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (1.8 EPR ENGINE RUNUP)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 03)
 (29 OCT 75)
 (PAGE 17)

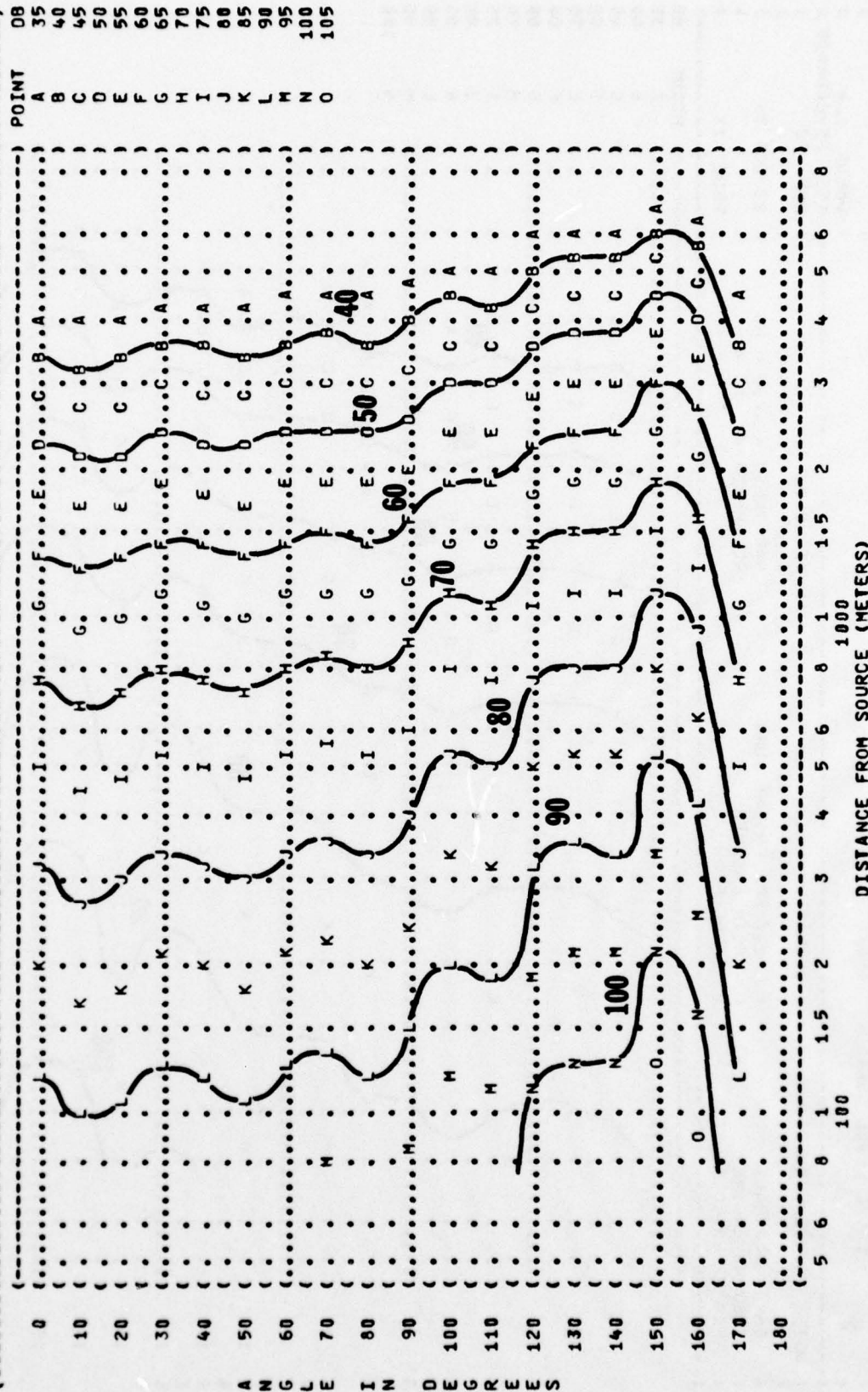
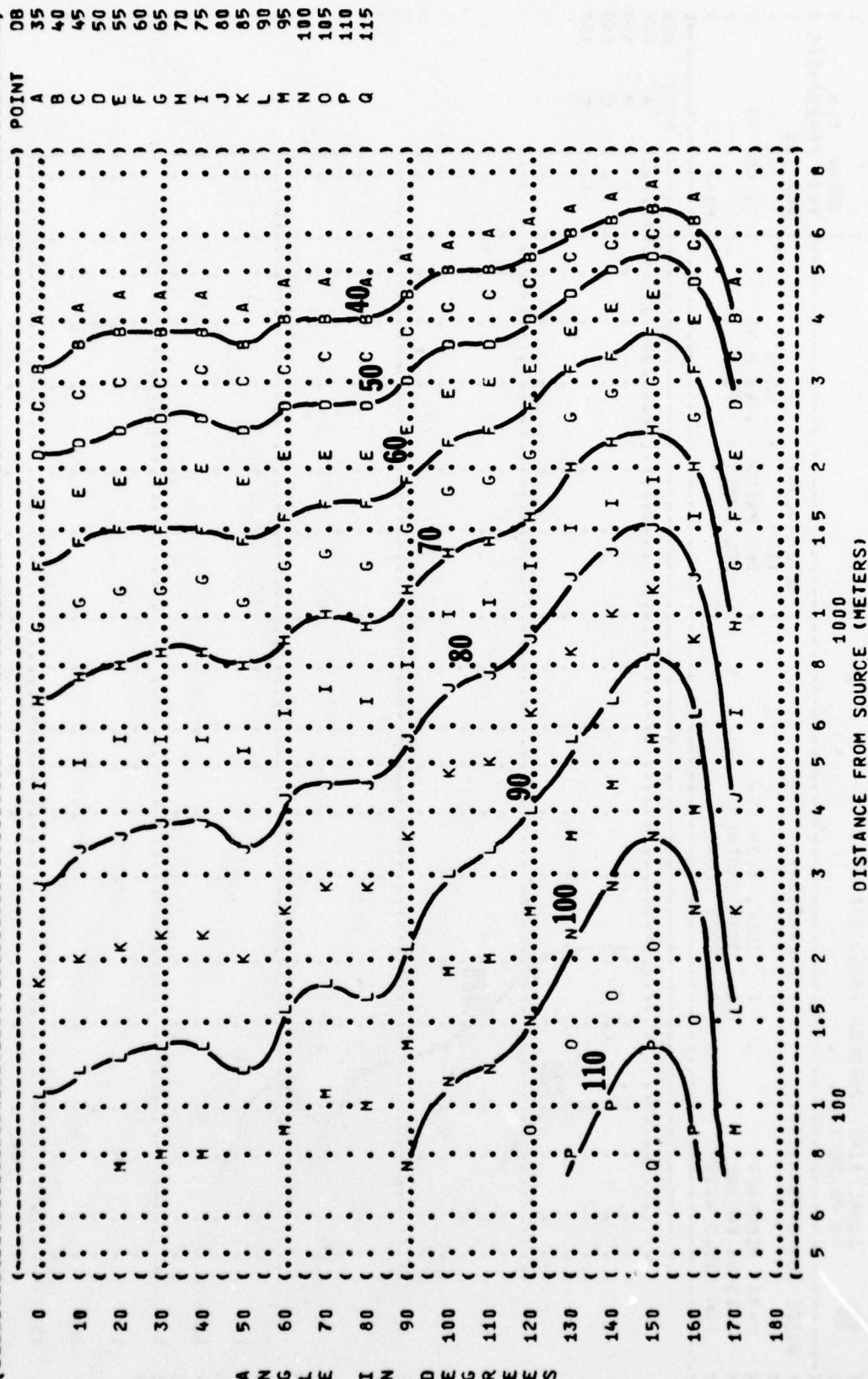
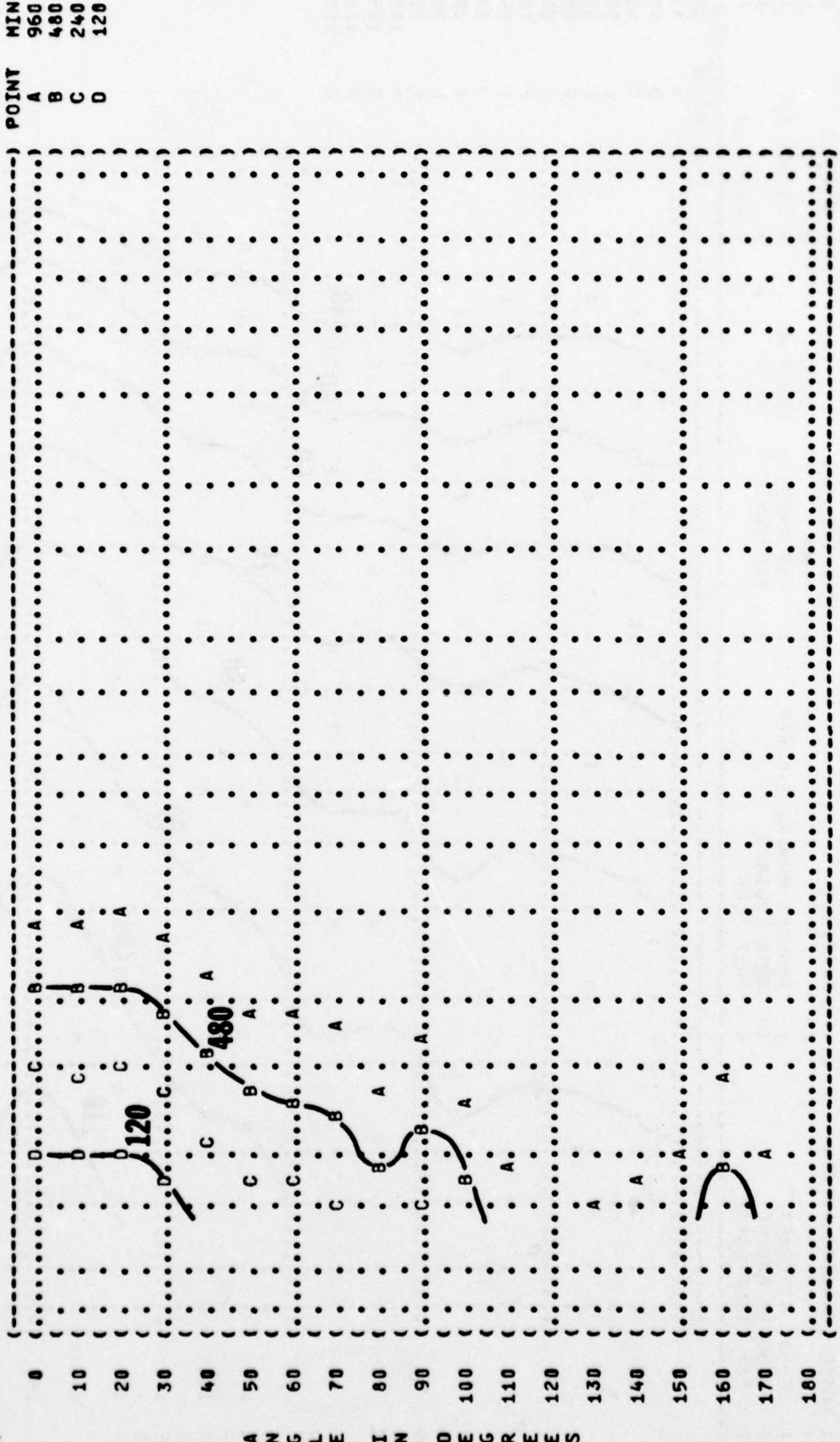


FIGURE:	PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)	IDENTIFICATION:
9	EQUAL LEVEL CONTOURS (DB)	
NOISE SOURCE/SUBJECT:	OPERATION:	METEOROLOGY:
C-9A AIRCRAFT	TAKEOFF POWER, 2.0 EPR	TEMP = 15 C
JT80-9A ENGINE	BOTH ENGINES	BAR PRESS = .760 M HG
FAR FIELD NOISE	FREE FLOW	REL HUMID = 70 %
		PAGE 17

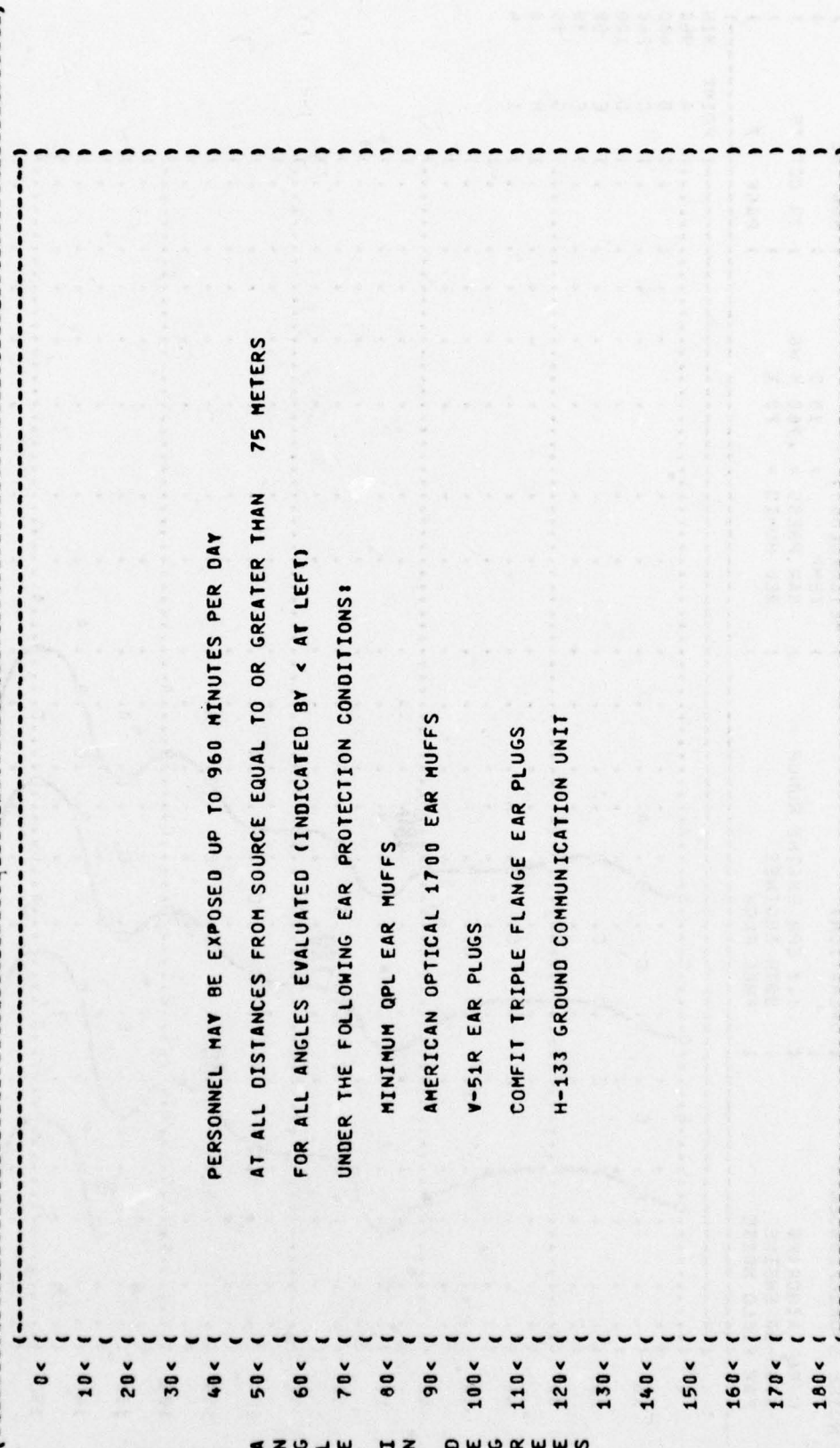


((FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) IDENTIFICATION:)
 ((FIGURE: EQUAL TIME CONTOURS (MINUTES)))
 ((10 NO PROTECTION))
 ((NOISE SOURCE/SUBJECT:))
 ((C-9A AIRCRAFT))
 ((JT8D-9A ENGINE))
 ((FAR FIELD NOISE))
 ((OPERATION:))
 ((IDLE, 1.05 EFR))
 ((BOTH ENGINES))
 ((FREE FLOW))
 ((METEOROLOGY:))
 ((TEMP = 15 C))
 ((BAR PRESS = .760 M HG))
 ((REL HUMID = 70 %))
 ((TEST 75-002-015))
 ((RUN 01))
 ((OMEGA 1.4))
 ((29 OCT 75))
 ((PAGE 7))



DISTANCE FROM SOURCE (METERS)

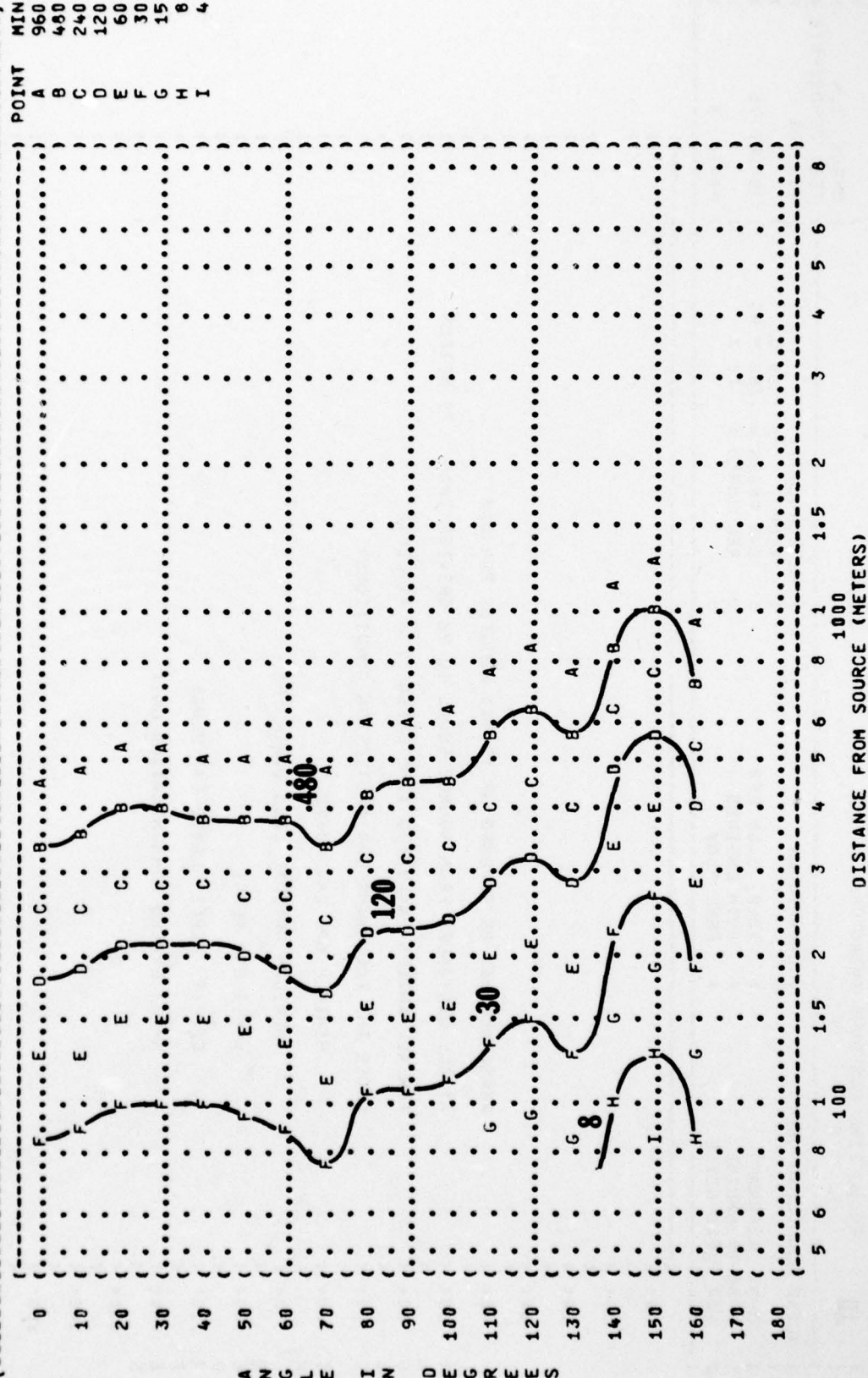
FIGURE 10 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) IDENTIFICATION:
 NOISE SOURCE/SUBJECT: OPERATION: METEOROLOGY: OMEGA 1.4
 C-9A AIRCRAFT (IDLE, 1.05 EPR) TEMP = 15 C TEST 75-002-015
 JT80-9A ENGINE (BOTH ENGINES) BAR PRESS = .760 M HG RUN 01
 FAR FIELD NOISE (FREE FLOW) REL HUMID = 70 % 29 OCT 75
 PAGE 8



PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY
 AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS
 FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)
 UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:
 MINIMUM QPL EAR MUFFS
 AMERICAN OPTICAL 1700 EAR MUFFS
 V-51R EAR PLUGS
 COMFIT TRIPLE FLANGE EAR PLUGS
 H-133 GROUND COMMUNICATION UNIT

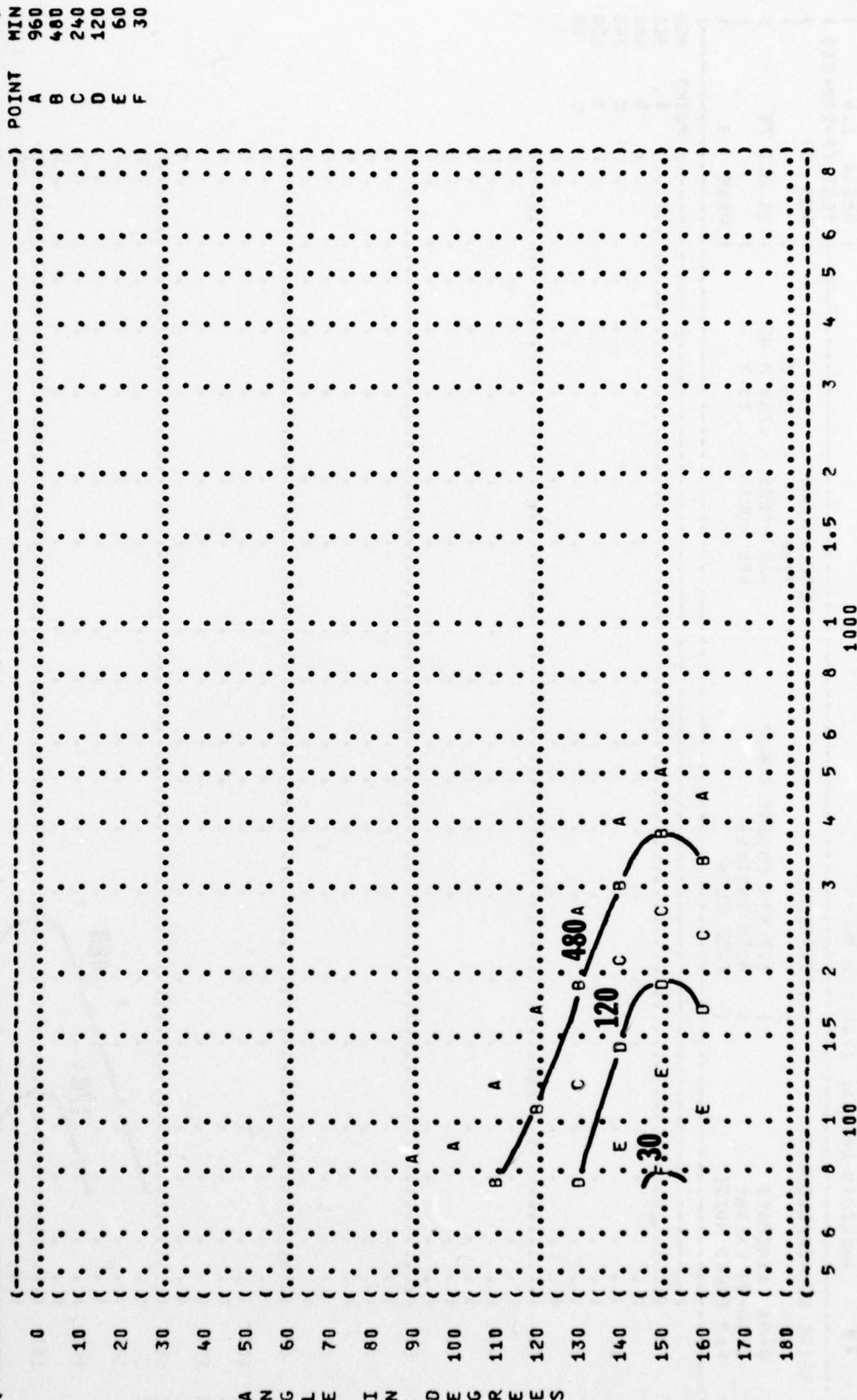
DISTANCE FROM SOURCE (METERS)

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(-----)
( FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION: )
( EQUAL TIME CONTOURS (MINUTES) ) )
(      10      ) )
( NO PROTECTION ) )
(-----)
( NOISE SOURCE/SUBJECT: ) OPERATION: ) METEOROLOGY: )
( ) ) TEMP = 15 C ) )
( C-9A AIRCRAFT ) 1.7 EPR ENGINE RUNUP ) BAR PRESS = .760 M HG )
( JT8D-9A ENGINE ) BOTH ENGINES ) REL HUMID = 70 % )
( FAR FIELD NOISE ) FREE FLOW ) PAGE 7 )
(-----)
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420 JW HZ DEURWWS

(FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) IDENTIFICATION:)
 ((10 EQUAL TIME CONTOURS (MINUTES)))
 (MINIMUM QPL EAR MUFFS) OMEGA 1.4
 (NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:) TEST 75-002-015
 (C-9A AIRCRAFT) 1.7 EPR ENGINE RUNUP) TEMP = 15 C) RUN 02
 (JT8D-9A ENGINE) BOTH ENGINES) BAR PRESS = .760 M HG) 29 OCT 75
 (FAR FIELD NOISE) FREE FLOW) REL HUMID = 70 %) PAGE 8



	MIN	POINT
0	960	A
	480	B
10	240	C

DISTANCE FROM SOURCE (METERS)

(FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) IDENTIFICATION:)
 ((EQUAL TIME CONTOURS (MINUTES)))
 (10 COMFIT TRIPLE FLANGE EAR PLUGS) OMEGA 1.4
 () TEST 75-002-015)
 (NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:) RUN 02)
 ()))
 (C-9A AIRCRAFT)) TEMP = 15 C))
 (JT80-9A ENGINE)) BAR PRESS = .760 M HG) 29 OCT 75)
 (FAR FIELD NOISE)) REL HUMID = 70 %))
 ()))) PAGE 11)

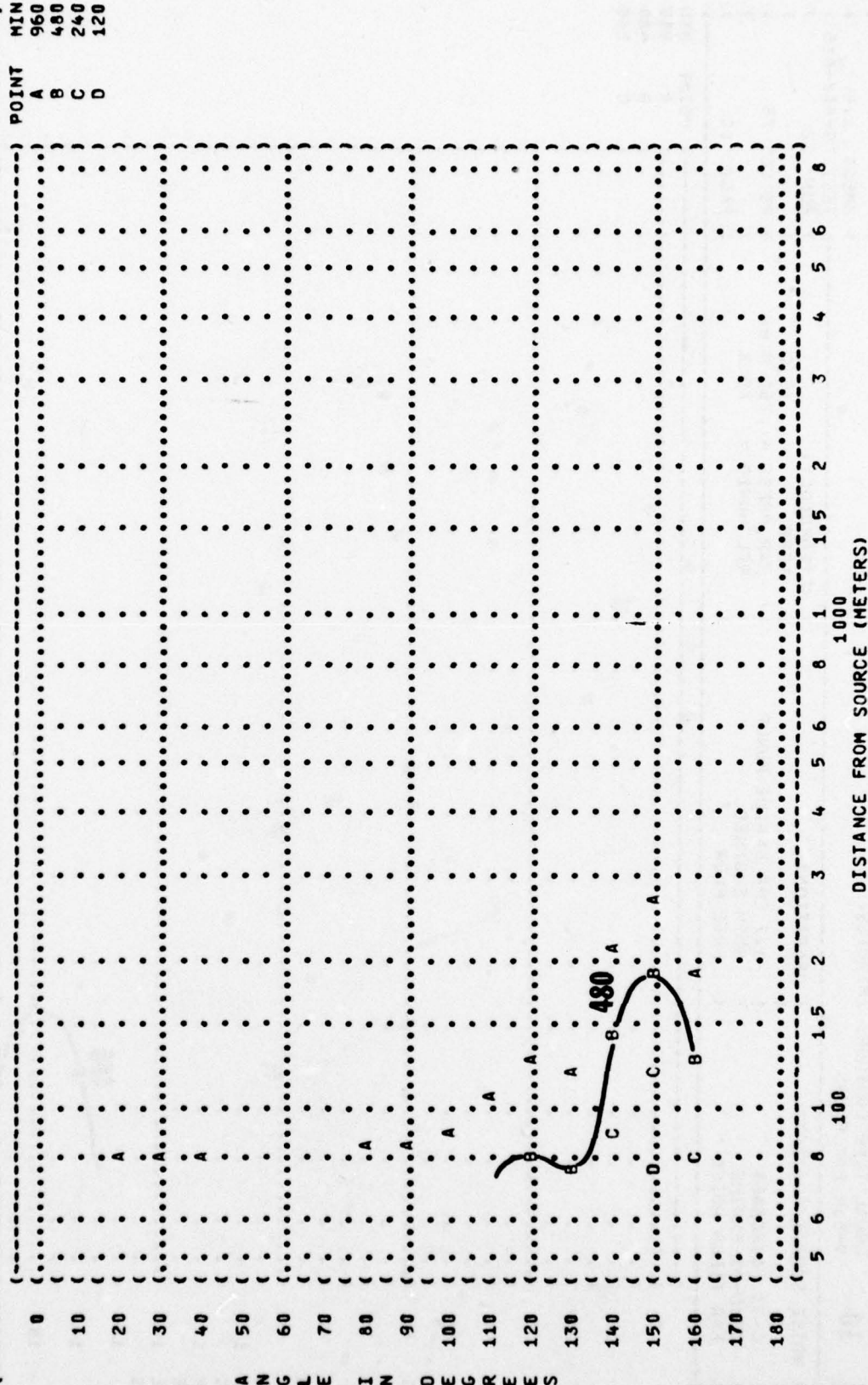
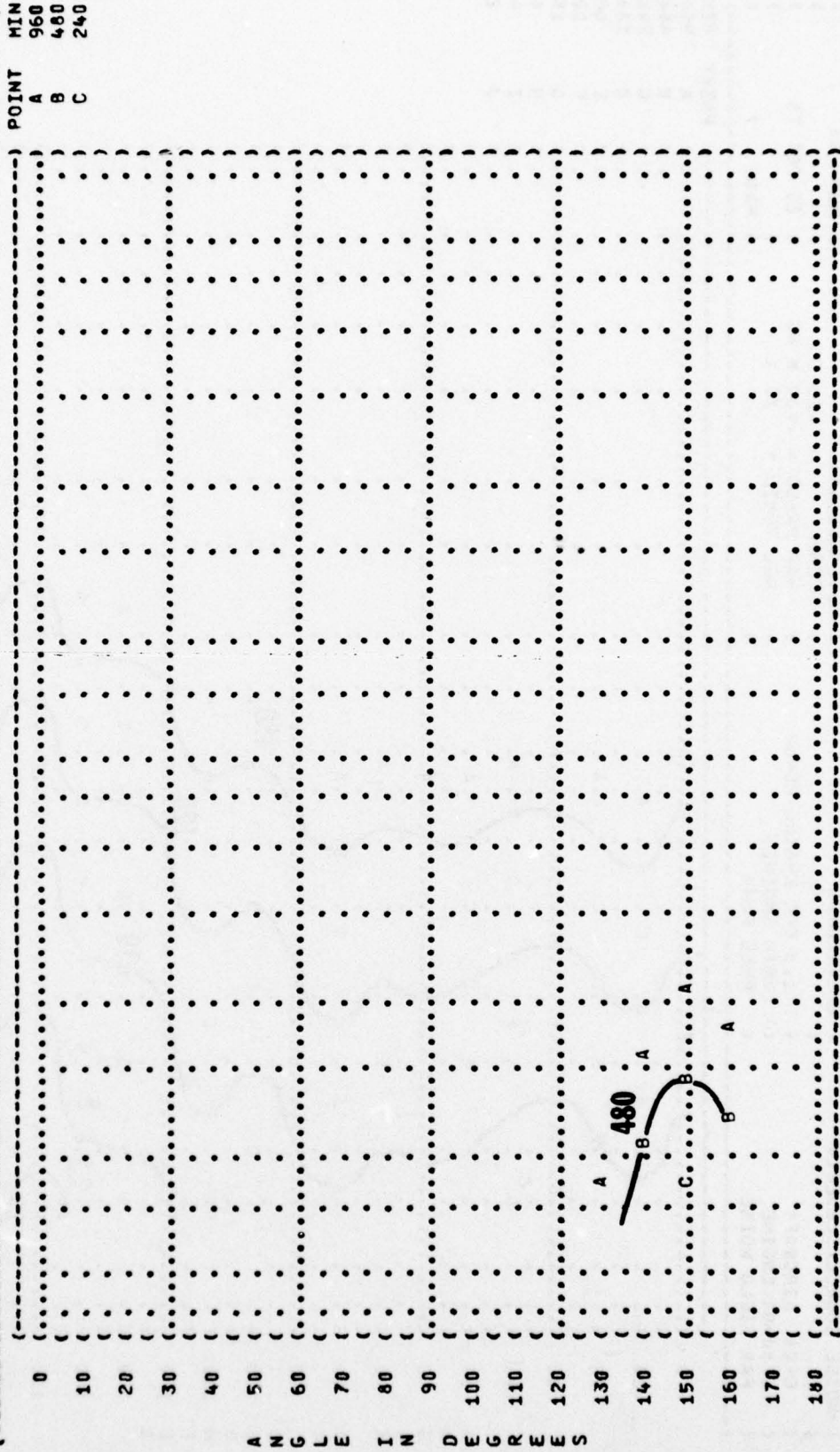


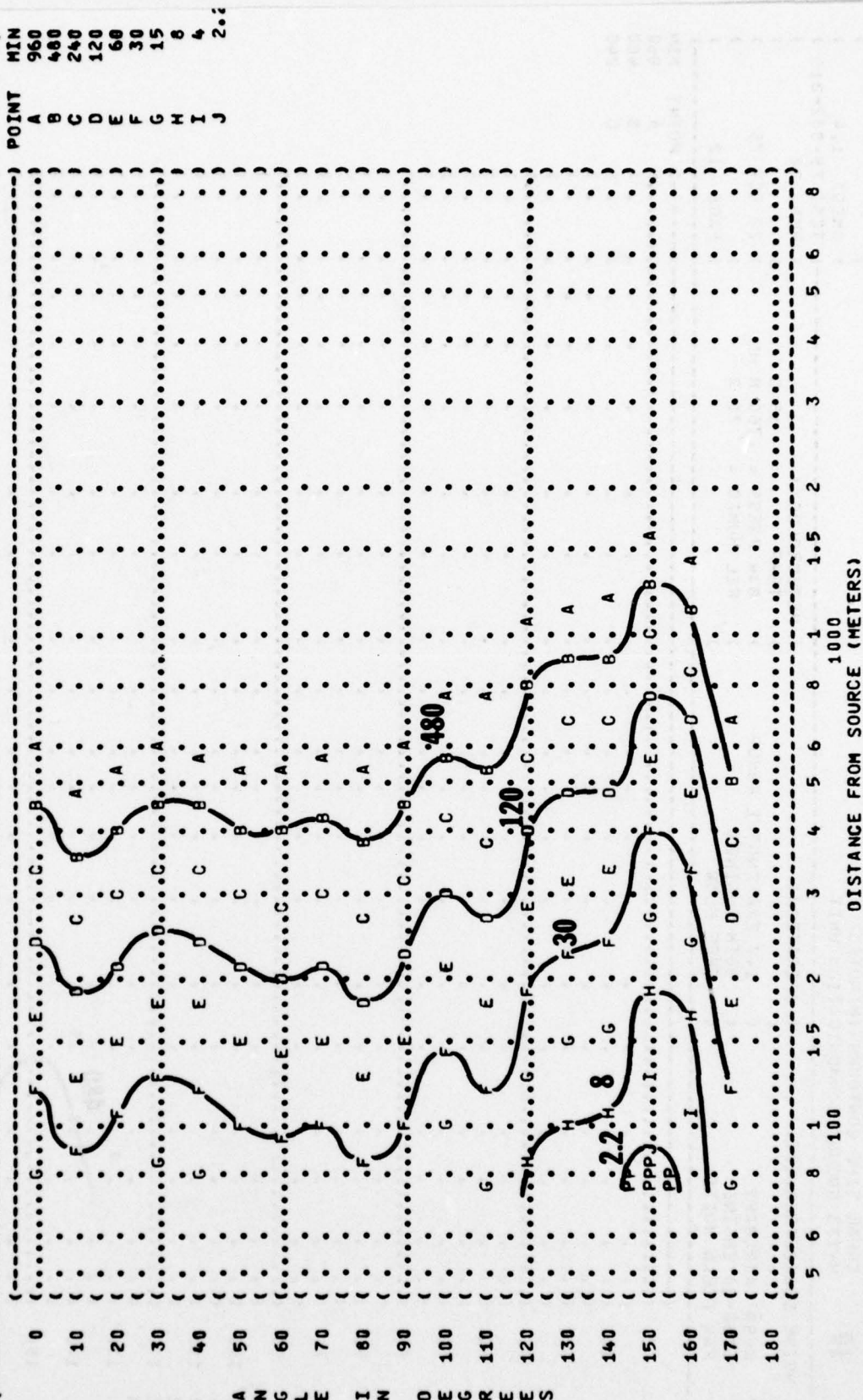
FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
 EQUAL TIME CONTOURS (MINUTES)
 H-133 GROUND COMMUNICATION UNIT
 NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY: TEMP = 15 C
 C-9A AIRCRAFT (1.7 EPR ENGINE RUNUP) BAR PRESS = .760 M HG
 JT80-9A ENGINE (BOTH ENGINES) REL HUMID = 70 %
 FAR FIELD NOISE (FREE FLOW)
 RUN 02
 TEST 75-002-015
 PAGE 12
 IDENTIFICATION: OMEGA 1.4



A N G L E I N D E G R E E S

DISTANCE FROM SOURCE (METERS)

```
(-----)
( FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION:
( EQUAL TIME CONTOURS (MINUTES) )
( 10 ) OMEGA 1.4
( NO PROTECTION ) TEST 75-002-015
(-----)
( NOISE SOURCE/SUBJECT: ) METEOROLOGY:
( ) TEMP = 15 C
( C-9A AIRCRAFT ) BAR PRESS = .760 M HG
( JT8D-9A ENGINE ) BOTH ENGINES REL HUMID = 70 %
( FAR FIELD NOISE ) FREE FLOW
(-----)
( PAGE 7 )
```



P ADDITIONAL EAR PROTECTION REQUIRED.

FIGURE 1 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-015

RUN 03

29 OCT 75

PAGE 8

NOISE SOURCE/SUBJECT:

OPERATION:

1.8 EPR ENGINE RUNUP

BOTH ENGINES

FREE FLOW

METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

REL HUMID = 70 %

C-9A AIRCRAFT

JT80-9A ENGINE

FAR FIELD NOISE

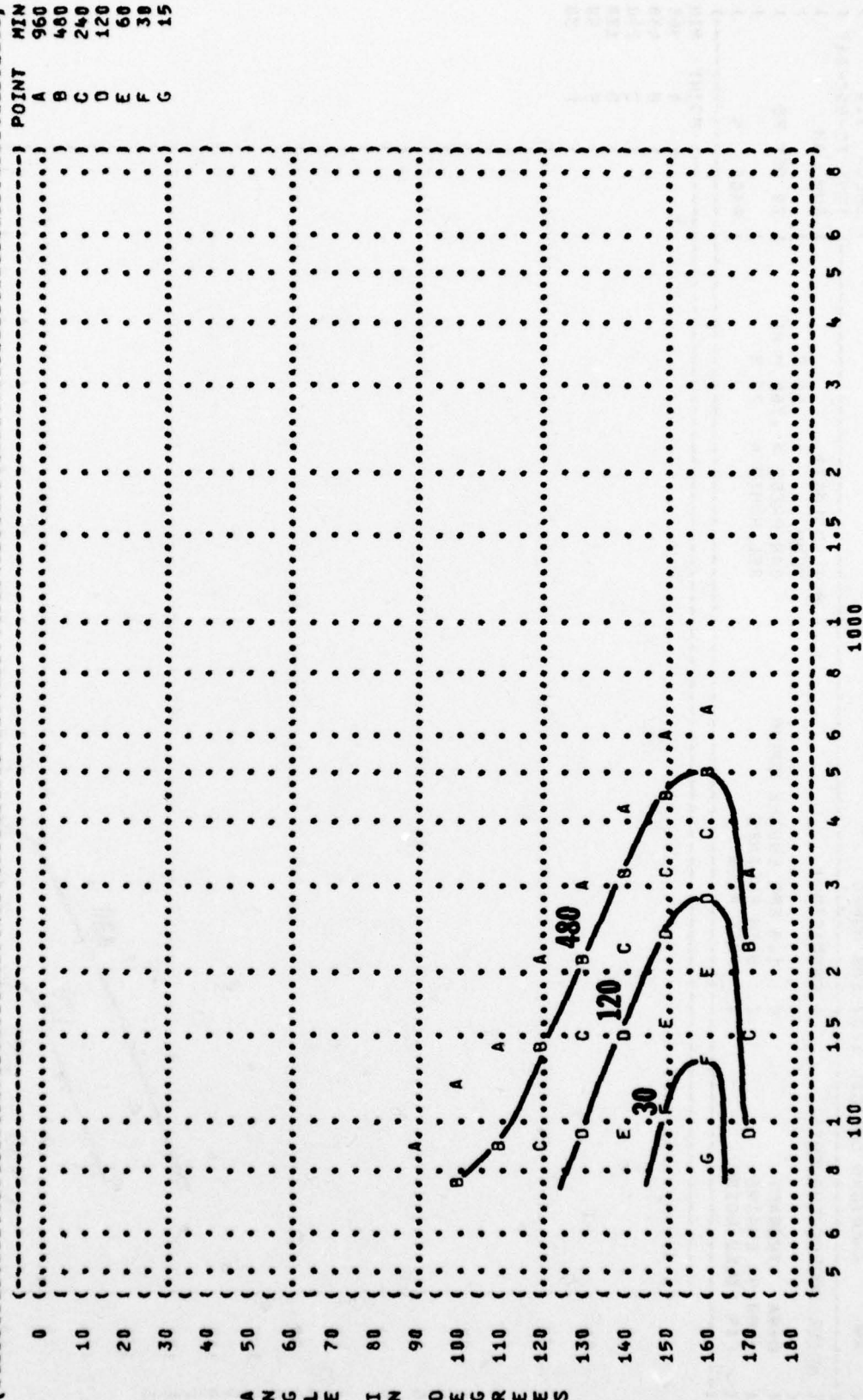


FIGURE	MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)	IDENTIFICATION
10	EQUAL TIME CONTOURS (MINUTES)	
	AMERICAN OPTICAL 1700 EAR MUFFS	OMEGA 1.4
		TEST 75-002-015
NOISE SOURCE/SUBJECT	OPERATION	RUN 03
		METEOROLOGY
		TEMP = 15 C
C-9A AIRCRAFT	1.8 EPR ENGINE RUNUP	BAR PRESS = .760 M HG
JT80-9A ENGINE	BOTH ENGINES	REL HUMID = 70 %
FAR FIELD NOISE	FREE FLOW	PAGE 9

ANGLE IN DEGREES

DISTANCE FROM SOURCE (METERS)

120

130

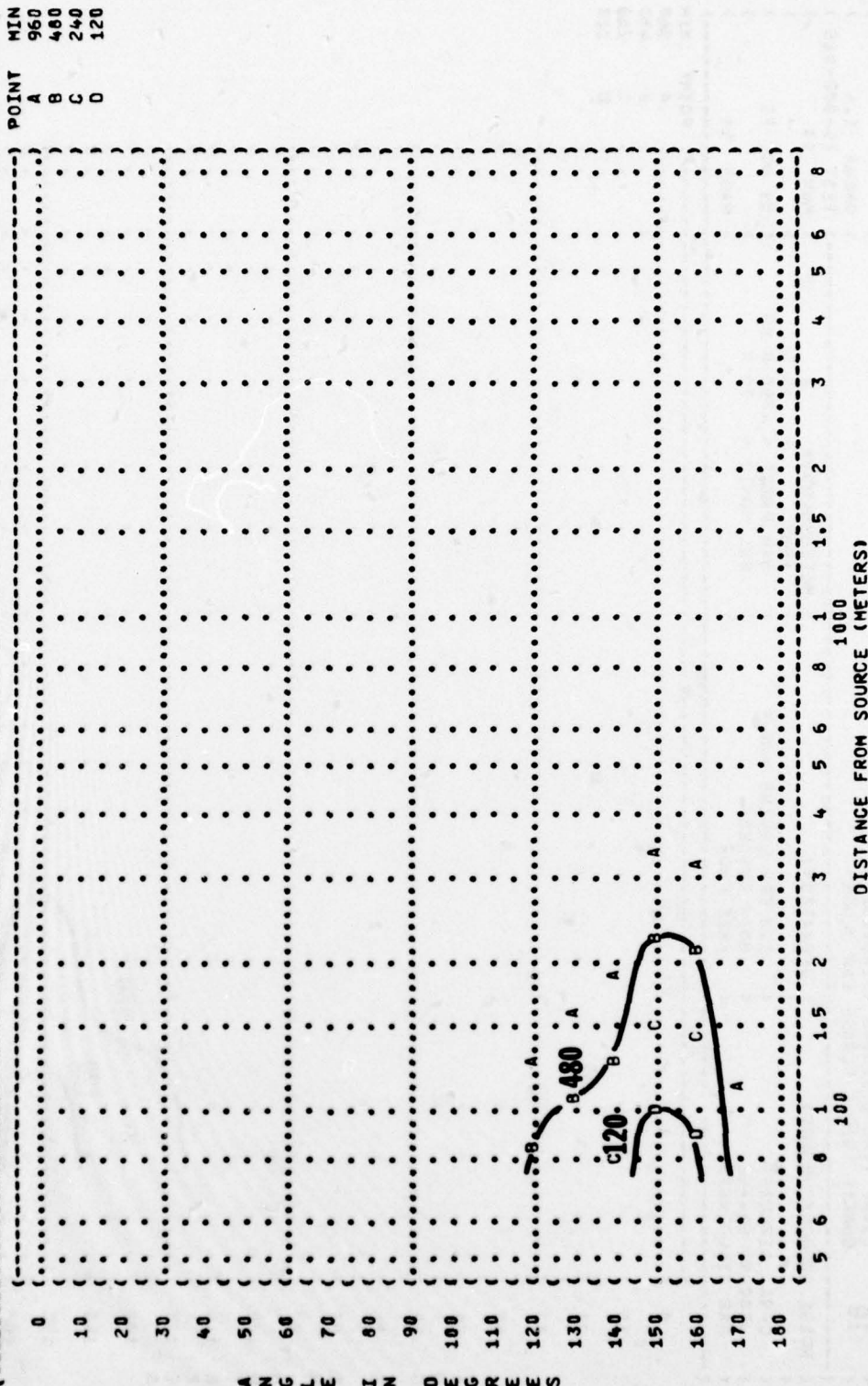
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1000

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 9

FIGURE:	MAXIMUM PERMISSIBLE TIME {T} FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)	IDENTIFICATION:
10	EQUAL TIME CONTOURS (MINUTES)	
	V-51R EAR PLUGS	OMEGA 1.4
		TEST 75-002-015
	NOISE SOURCE/SUBJECT:	RUN 03
	(OPERATION:	METEOROLOGY:
	(TEMP = 15 C	
	(1.0 EPR ENGINE RUNUP	BAR PRESS = .760 M HG
	(BOTH ENGINES	REL HUMID = 70 %
	(FREE FLOW	
	C-9A AIRCRAFT	29 OCT 75
	JT80-9A ENGINE	
	FAR FIELD NOISE	PAGE 10



```

(-----)
( FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION:
( EQUAL TIME CONTOURS (MINUTES) )
( 10 COMFIT TRIPLE FLANGE EAR PLUGS ) OMEGA 1.4
(-----)
( NOISE SOURCE/SUBJECT: ) OPERATION: ) METEOROLOGY: ) TEST 75-002-015
( ) ) ) RUN 03
( ) ) )
( C-9A AIRCRAFT ) 1.8 EPR ENGINE RUNUP ) TEMP = 15 C ) 29 OCT 75
( JT60-9A ENGINE ) BOTH ENGINES ) BAR PRESS = .760 M HG )
( FAR FIELD NOISE ) FREE FLOW ) REL HUMID = 70 % )
( ) ) ) PAGE 11
(-----)

```

MIN

POINT

A

B

C

D

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

5

6

8

1

100

1.5

2

3

4

5

6

8

1000

DISTANCE FROM SOURCE (METERS)

ANGLE IN DEGREES

POINT	HIN
A	960
B	480
C	240
D	120
E	60
F	30
G	15
H	8
I	4
J	2.2

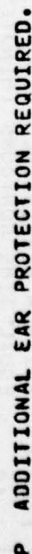


FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

10

EQUAL TIME CONTOURS (MINUTES)

MINIMUM OPL EAR NUFFS

IDENTIFICATION:
)
) OMEGA 1.4

NOISE SOURCE/SUBJECT:

(C-9A AIRCRAFT

(JT8D-9A ENGINE

(FAR FIELD NOISE

(OPERATION:

(TAKEOFF POWER, 2.0 EPR

(BOTH ENGINES

(FREE FLOW

) METEOROLOGY:

) TEMP = 15 C

) BAR PRESS = .760 M HG

) REL HUMID = 70 %

) RUN 04

) 29 OCT 75

) PAGE 8

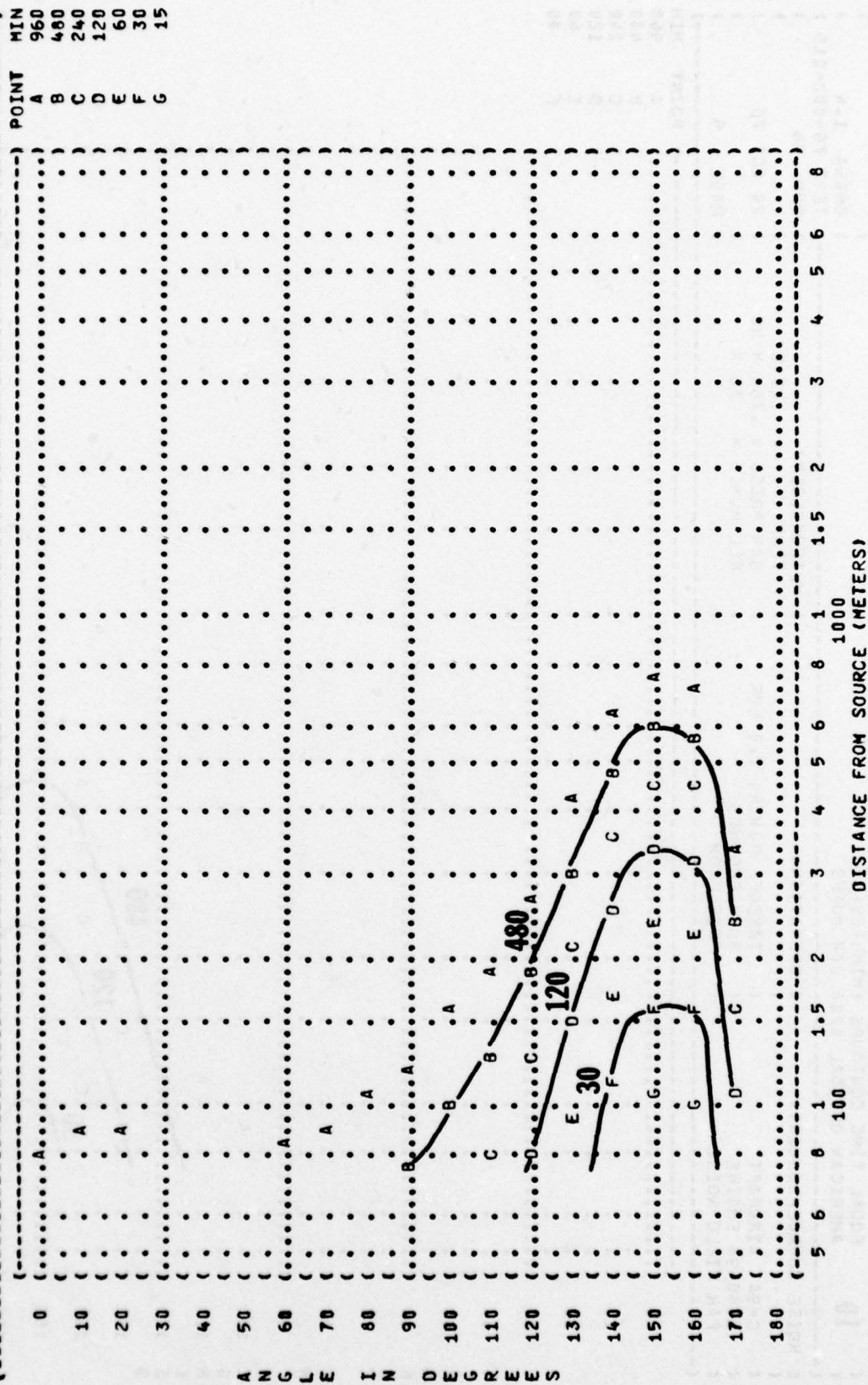


FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) IDENTIFICATION:)
 10 EQUAL TIME CONTOURS (MINUTES))
 V-51R EAR PLUGS)
 NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 C-9A AIRCRAFT (TAKEOFF POWER, 2.0 EPR) TEMP = 15 C)
 JT80-9A ENGINE (BOTH ENGINES) BAR PRESS = .760 M HG)
 FAR FIELD NOISE (FREE FLOW) REL HUMID = 70 %)
 TEST 75-002-015)
 RUN 04)
 29 OCT 75)
 PAGE 10)

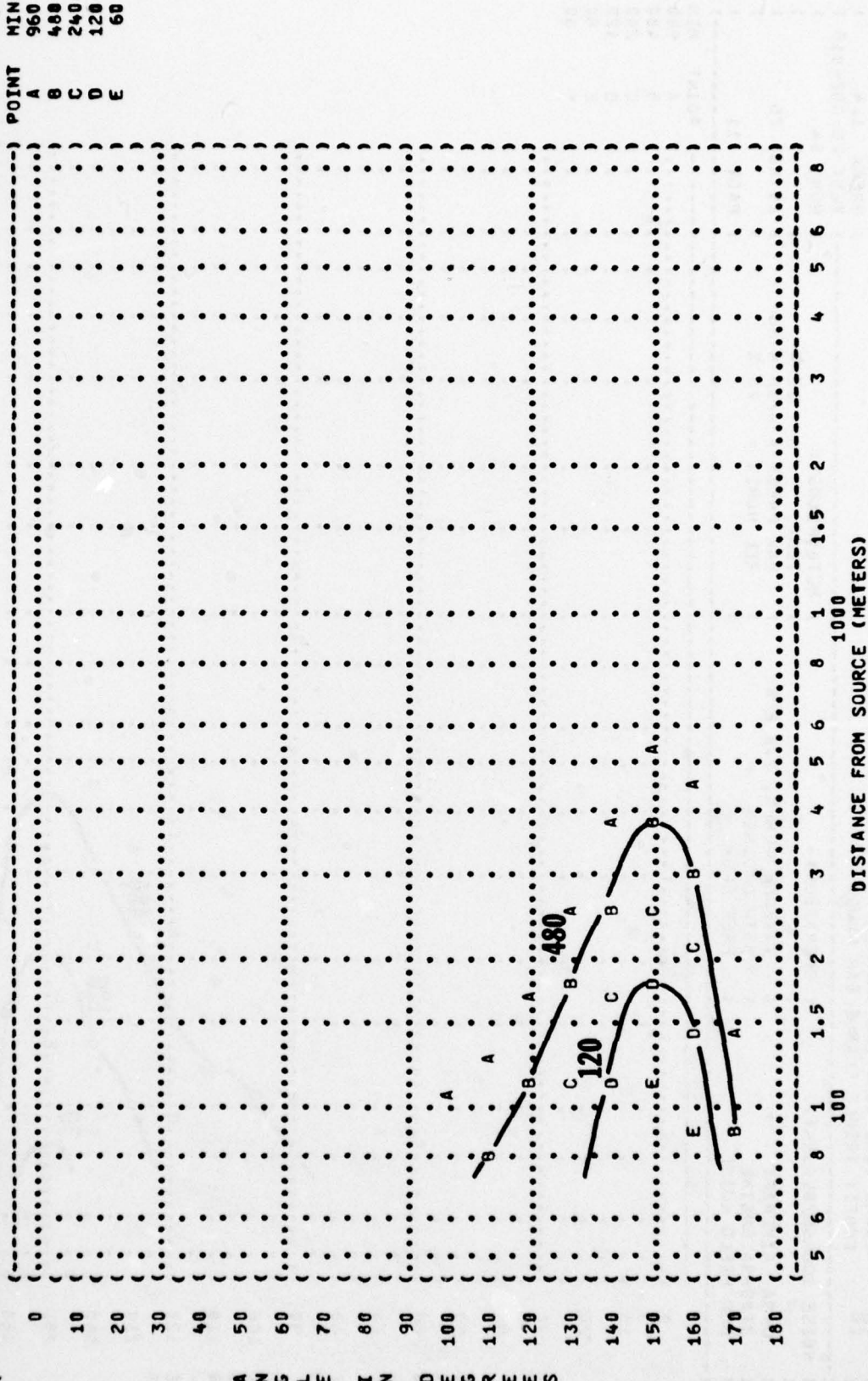


FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

IDENTIFICATION:

10

CONFIT TRIPLE FLANGE EAR PLUGS

NOISE SOURCE/SUBJECT:

OPERATION:

TAKEOFF POWER, 2.0 EPR

BOTH ENGINES

FREE FLOW

METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

REL HUMID = 70 %

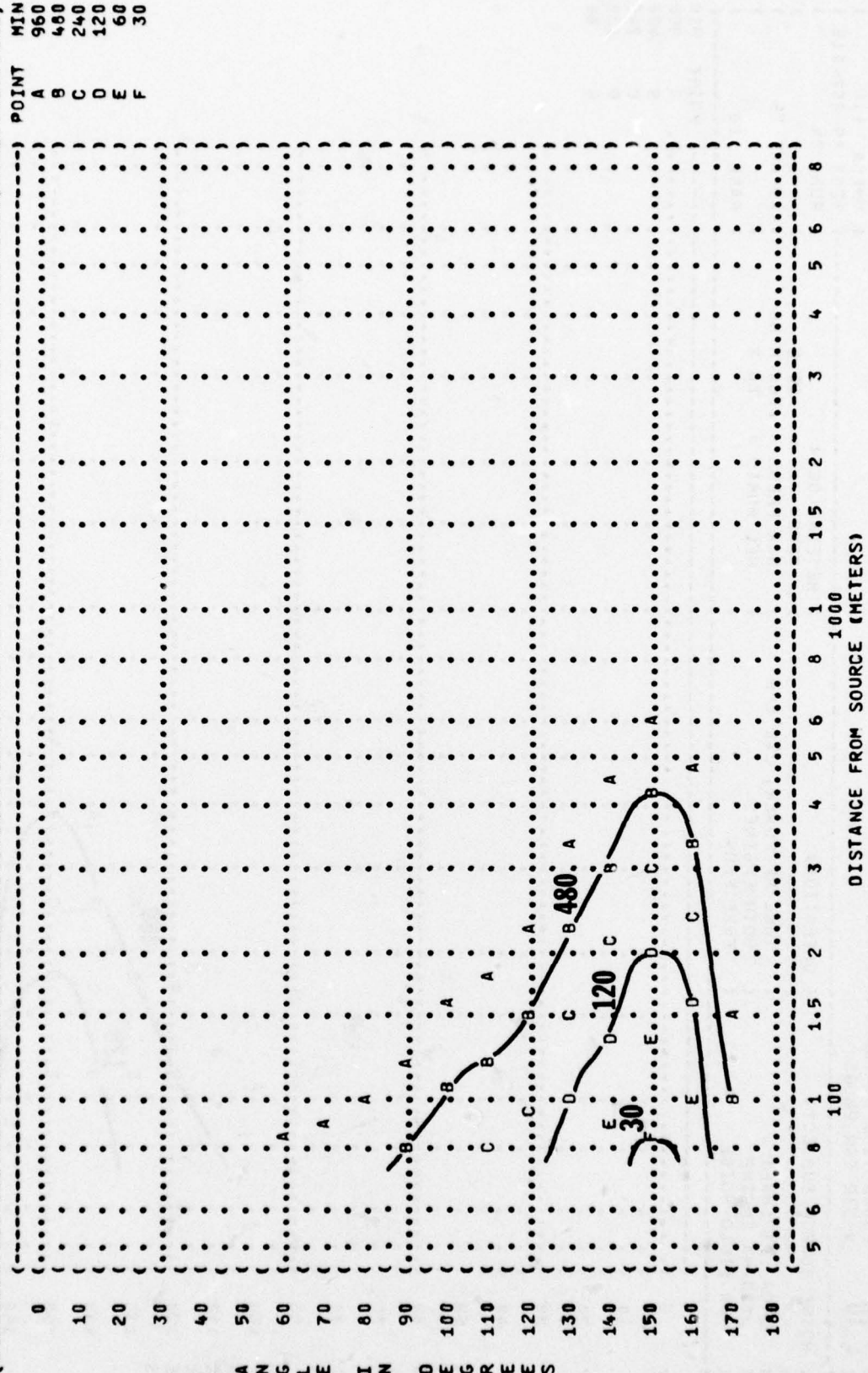
OMEGA 1.4

TEST 75-002-015

RUN 04

29 OCT 75

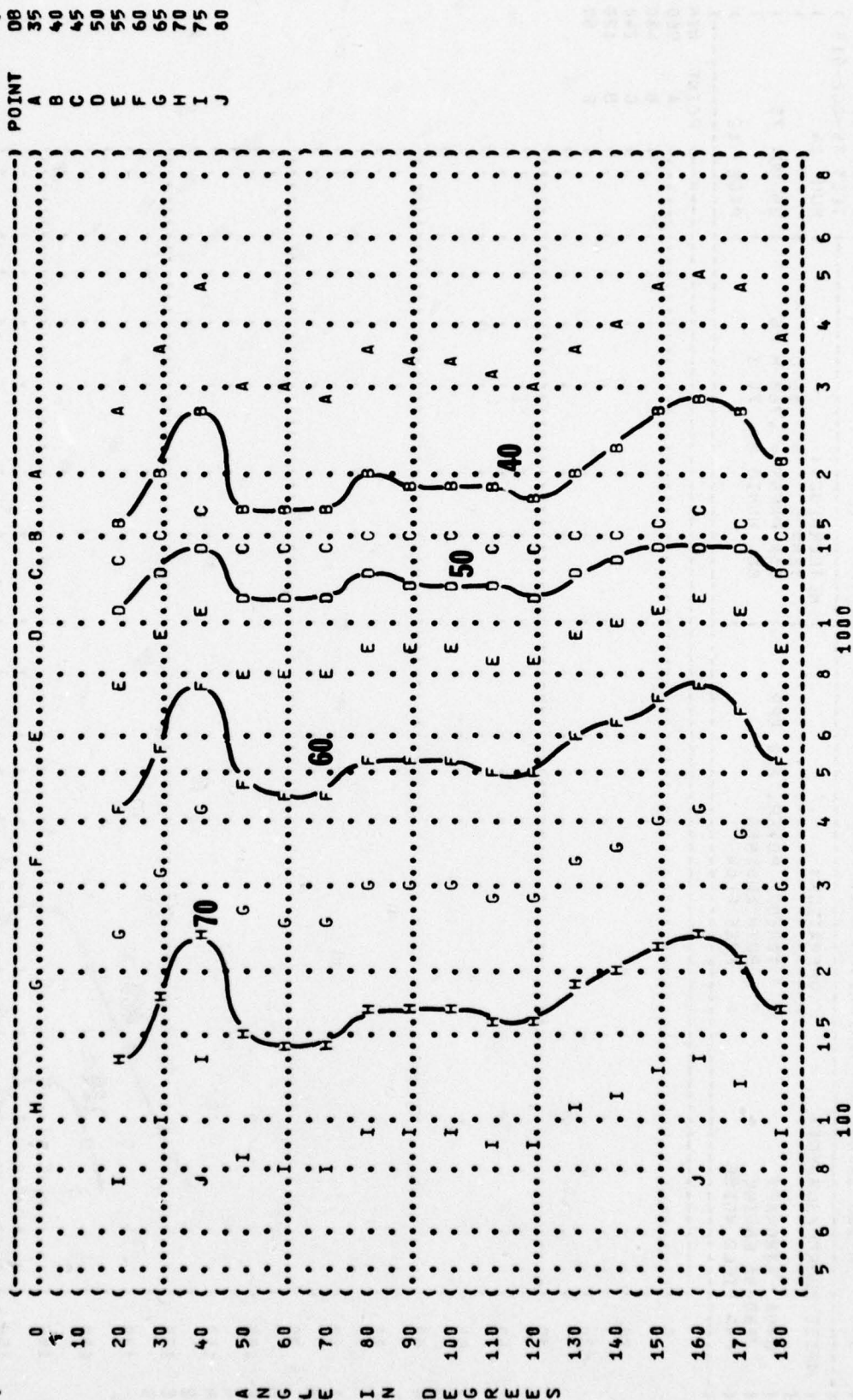
PAGE 11



ANGL EINS D EGR EES

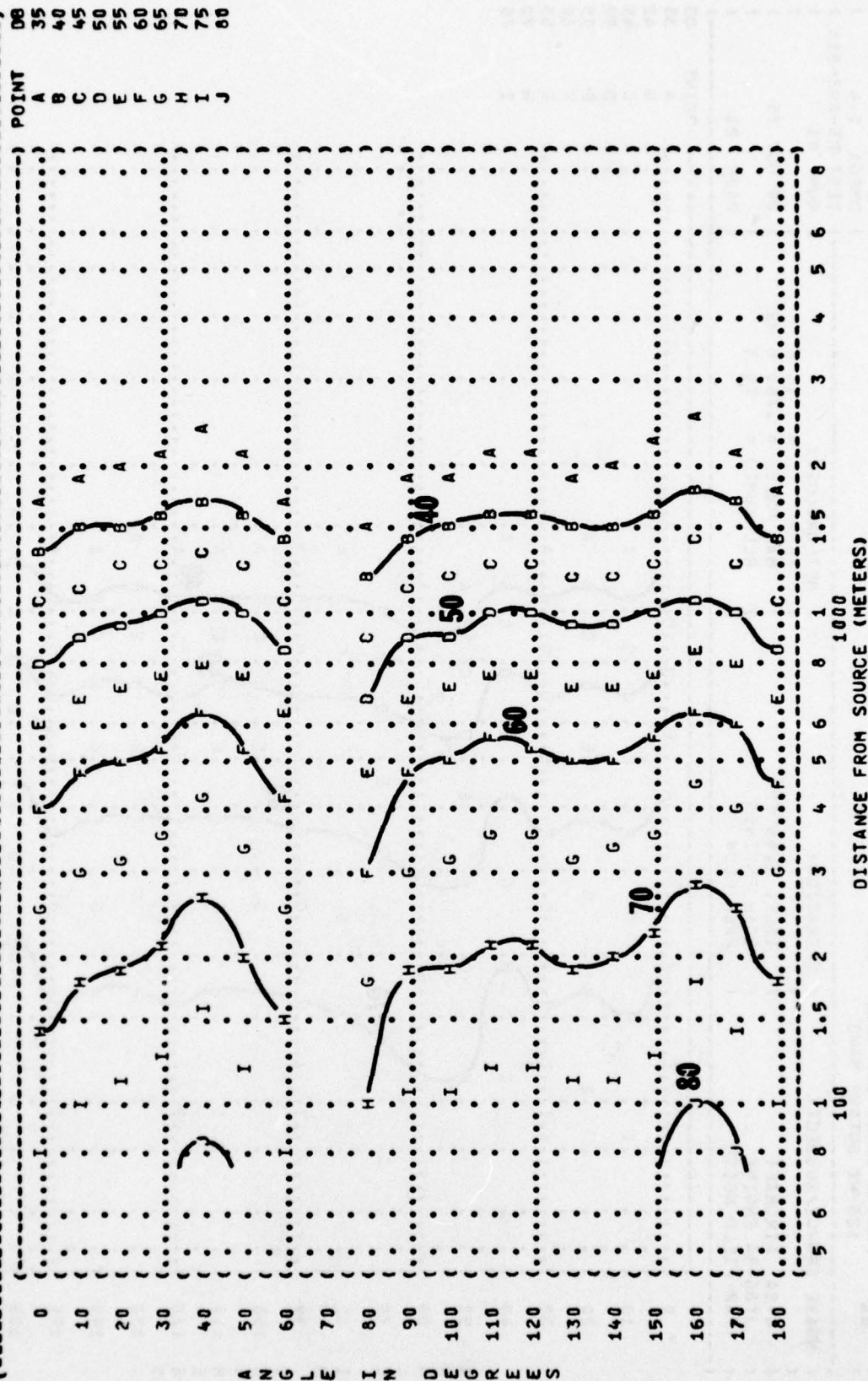
	MIN	POINT
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	B	480
10	C	240
	D	120
20	E	60

((FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 ((11 EQUAL LEVEL CONTOURS (DB)))
 ((31.5 HZ OCTAVE BAND))
 ((NOISE SOURCE/SUBJECT:))
 ((C-9A AIRCRAFT))
 ((JT80-9A ENGINE))
 ((FAR FIELD NOISE))
 ((OPERATION:))
 ((IDLE, 1.05 EPR))
 ((BOTH ENGINES))
 ((FREE FLOW))
 ((METEOROLOGY:))
 ((TEMP = 15 C))
 ((BAR PRESS = .760 M HG))
 ((REL HUMID = 70 %))
 ((TEST 75-002-015))
 ((RUN 01))
 ((PAGE 18))



A N G L E I N D E G R E E S

FIGURE: SOUND PRESSURE LEVEL (SPL)
 11 EQUAL LEVEL CONTOURS (DB)
 63 HZ OCTAVE BAND
 NOISE SOURCE/SUBJECT: OPERATION:
 C-9A AIRCRAFT IDLE, 1.05 EPR
 JT80-9A ENGINE BOTH ENGINES
 FAR FIELD NOISE FREE FLOW
 METEOROLOGY: TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 IDENTIFICATION: OMEGA 1.4
 TEST 75-002-015
 RUN 01
 29 OCT 75
 PAGE 19




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(-----)
( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( 11 EQUAL LEVEL CONTOURS (DB) ) )
( 125 HZ OCTAVE BAND ) OMEGA 1.4 )
(-----)
( NOISE SOURCE/SUBJECT: ) OPERATION: ) METEOROLOGY: )
( C-9A AIRCRAFT ) IDLE, 1.05 EPR ) TEMP = 15 C )
( JT80-9A ENGINE ) BOTH ENGINES ) BAR PRESS = .760 M HG )
( FAR FIELD NOISE ) FREE FLOW ) REL HUMID = 70 % )
(-----)
( PAGE 20 )
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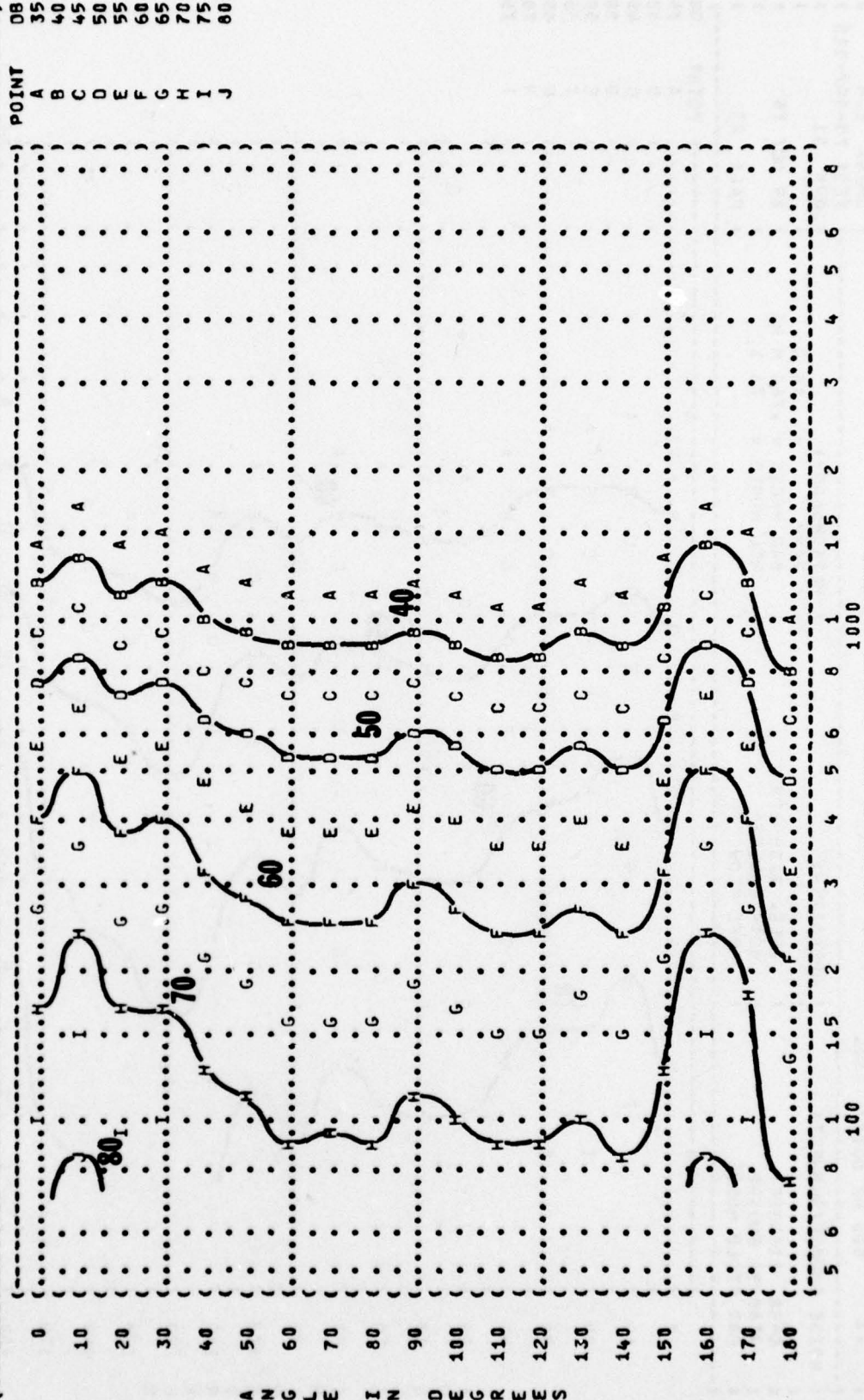
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POINT
A B C D E F G H I

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100 1000

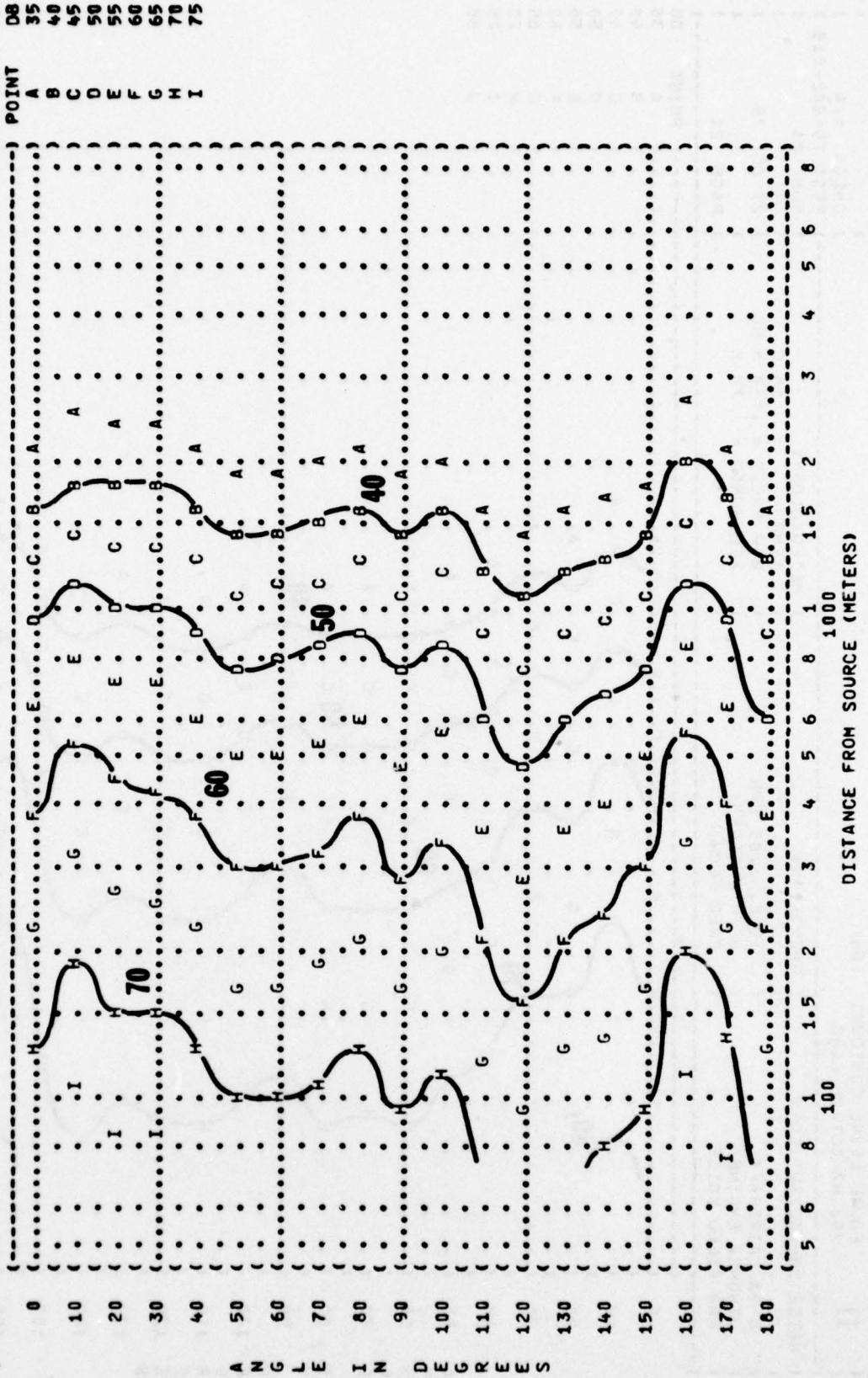
DISTANCE FROM SOURCE (METERS)

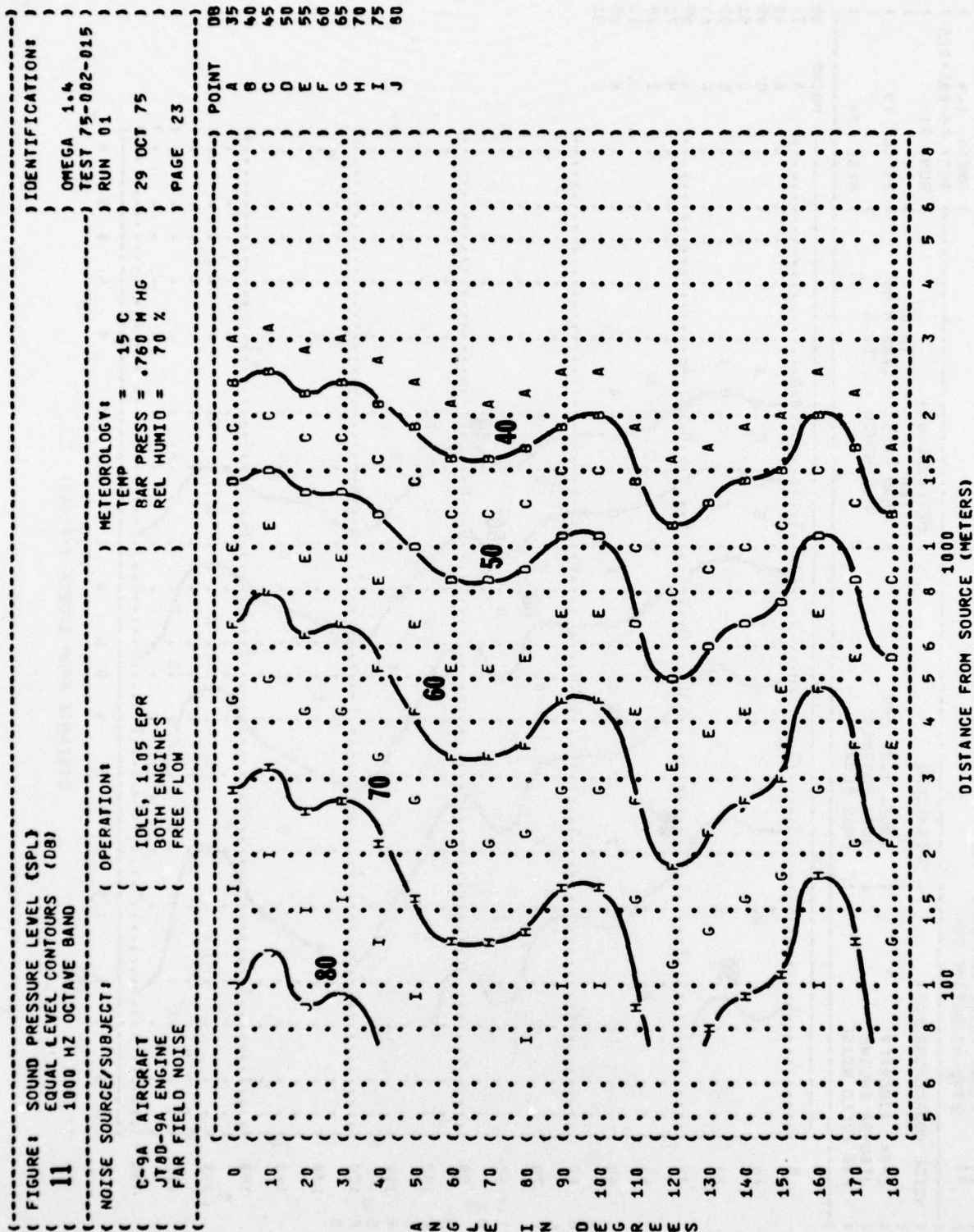
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 (11 EQUAL LEVEL CONTOURS (DB)
 (250 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (IDLE, 1.05 EPR
 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 01
 (29 OCT 75
 (PAGE 21



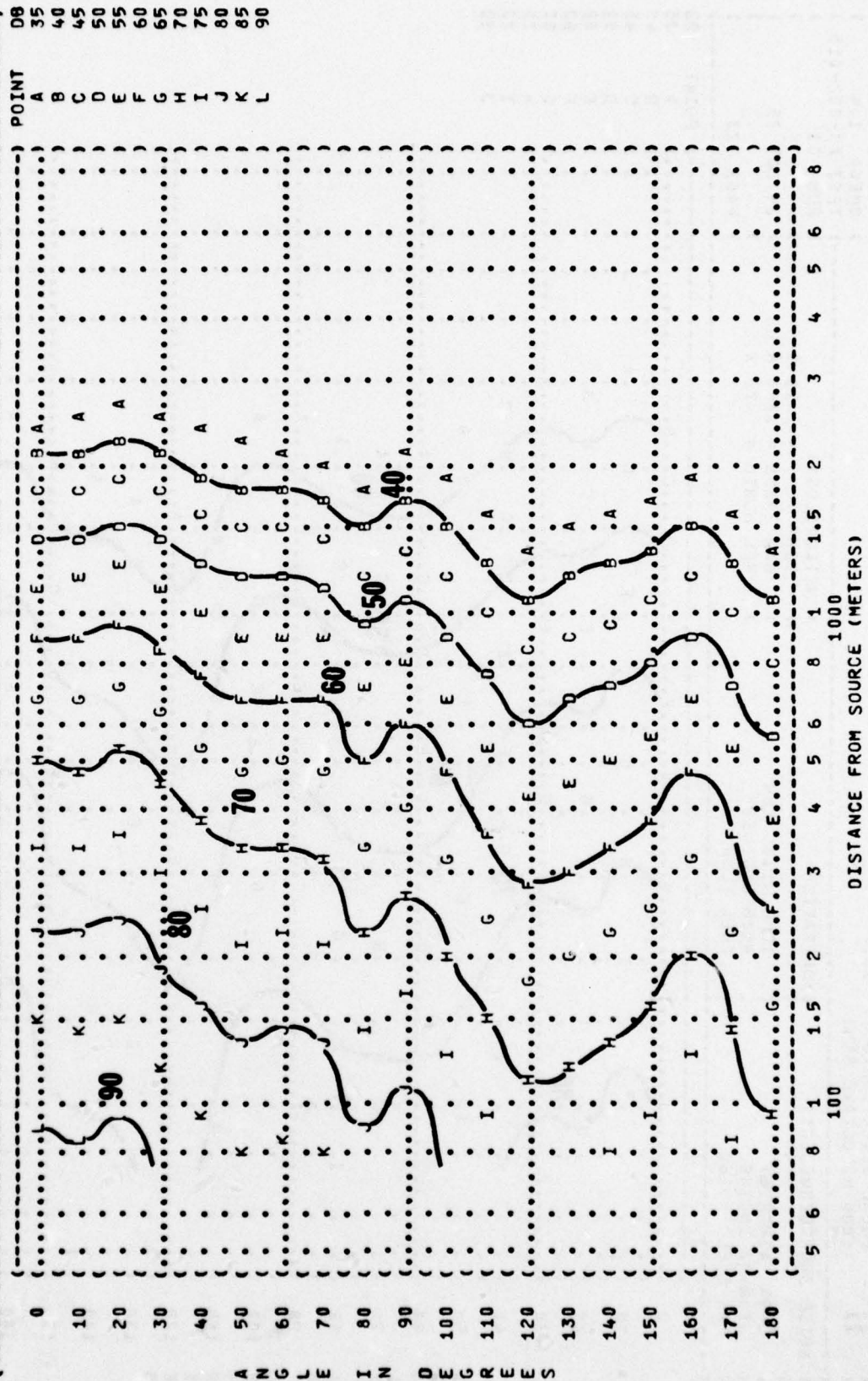
DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (500 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (JT8D-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (IDLE, 1.05 EPR)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 01)
 (29 OCT 75)
 (PAGE 22)



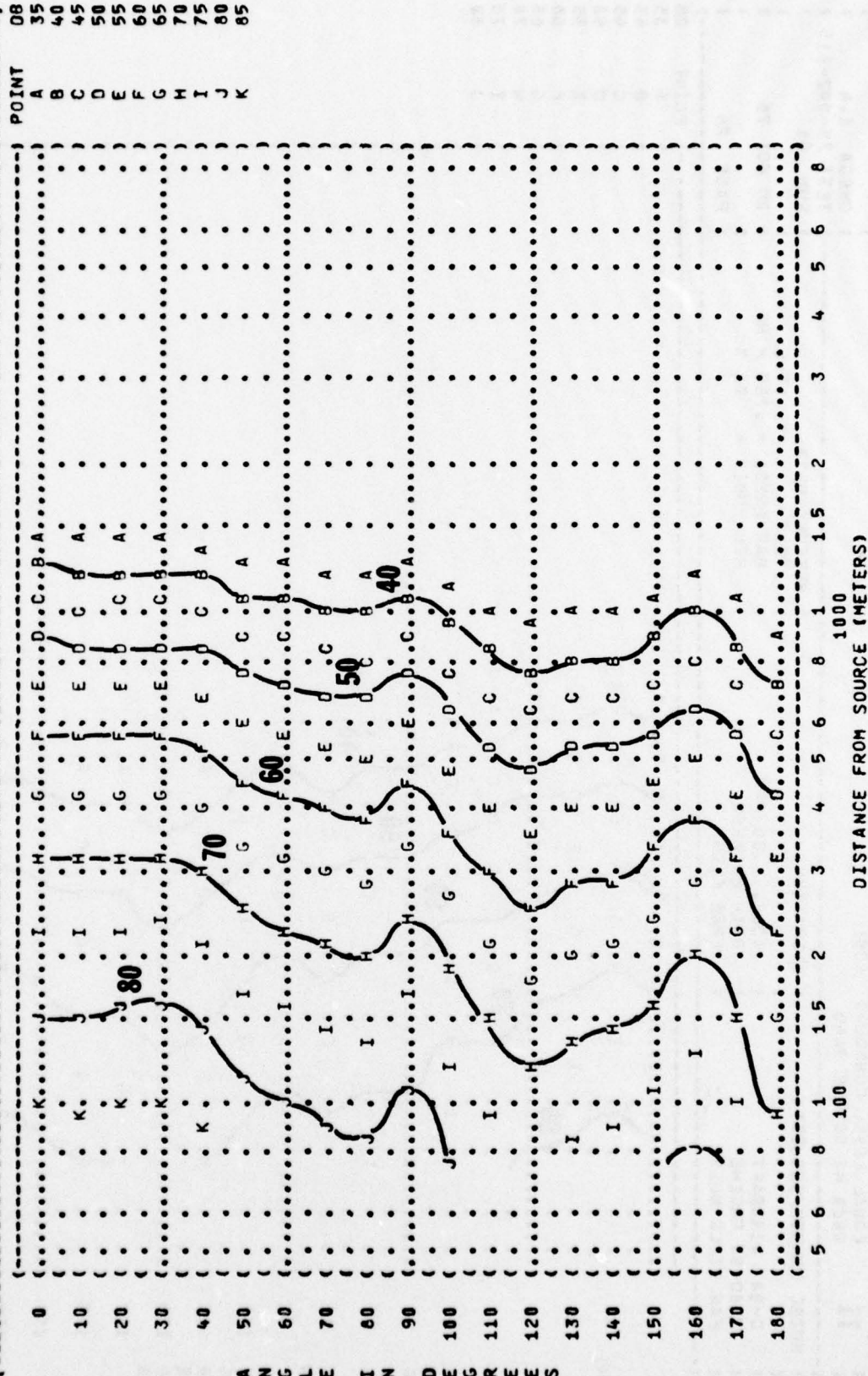


(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (2000 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (JT80-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (IDLE, 1.05 EPR)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 01)
 (29 OCT 75)
 (PAGE 24)

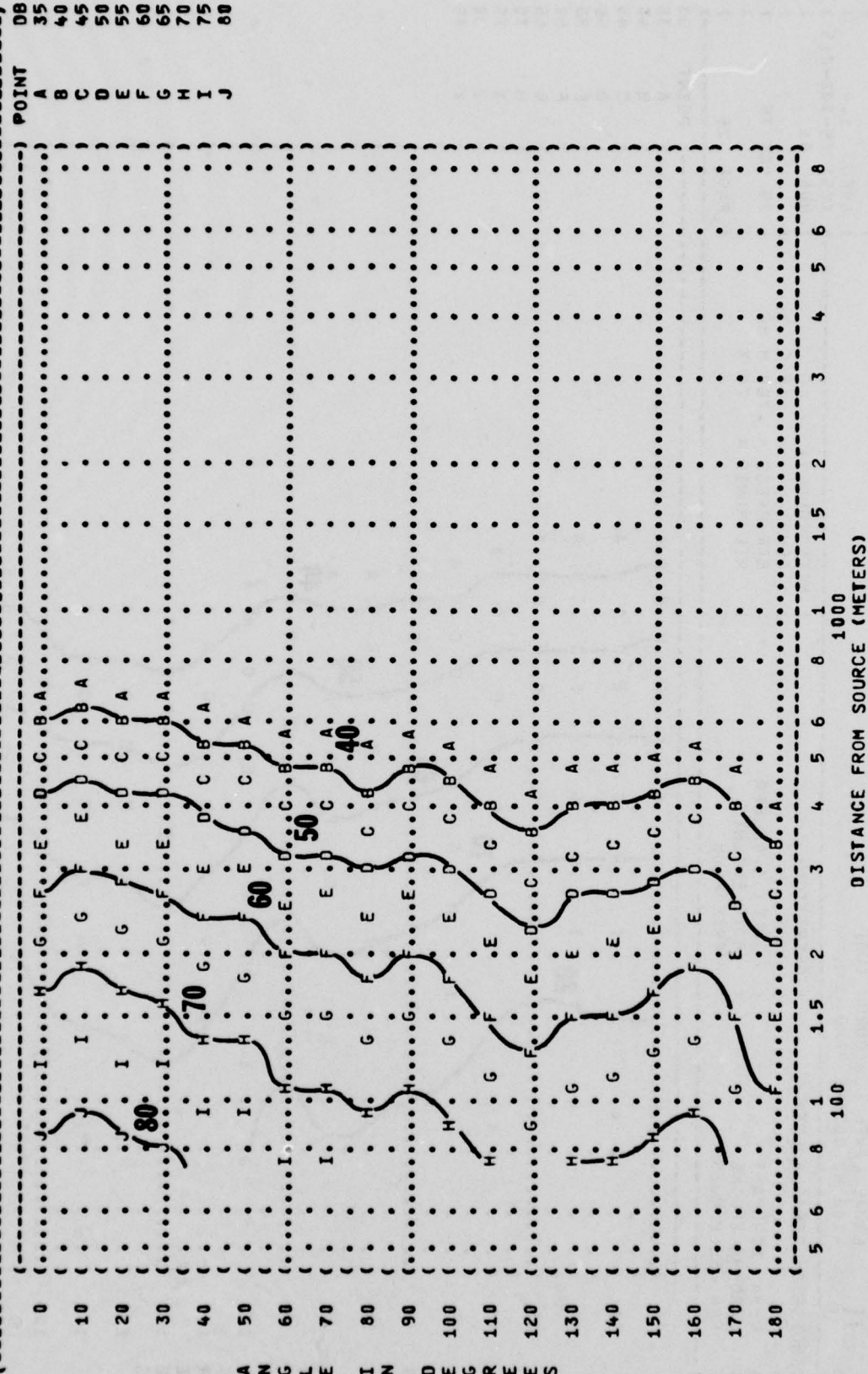


A N G L E I N D E G R E E S

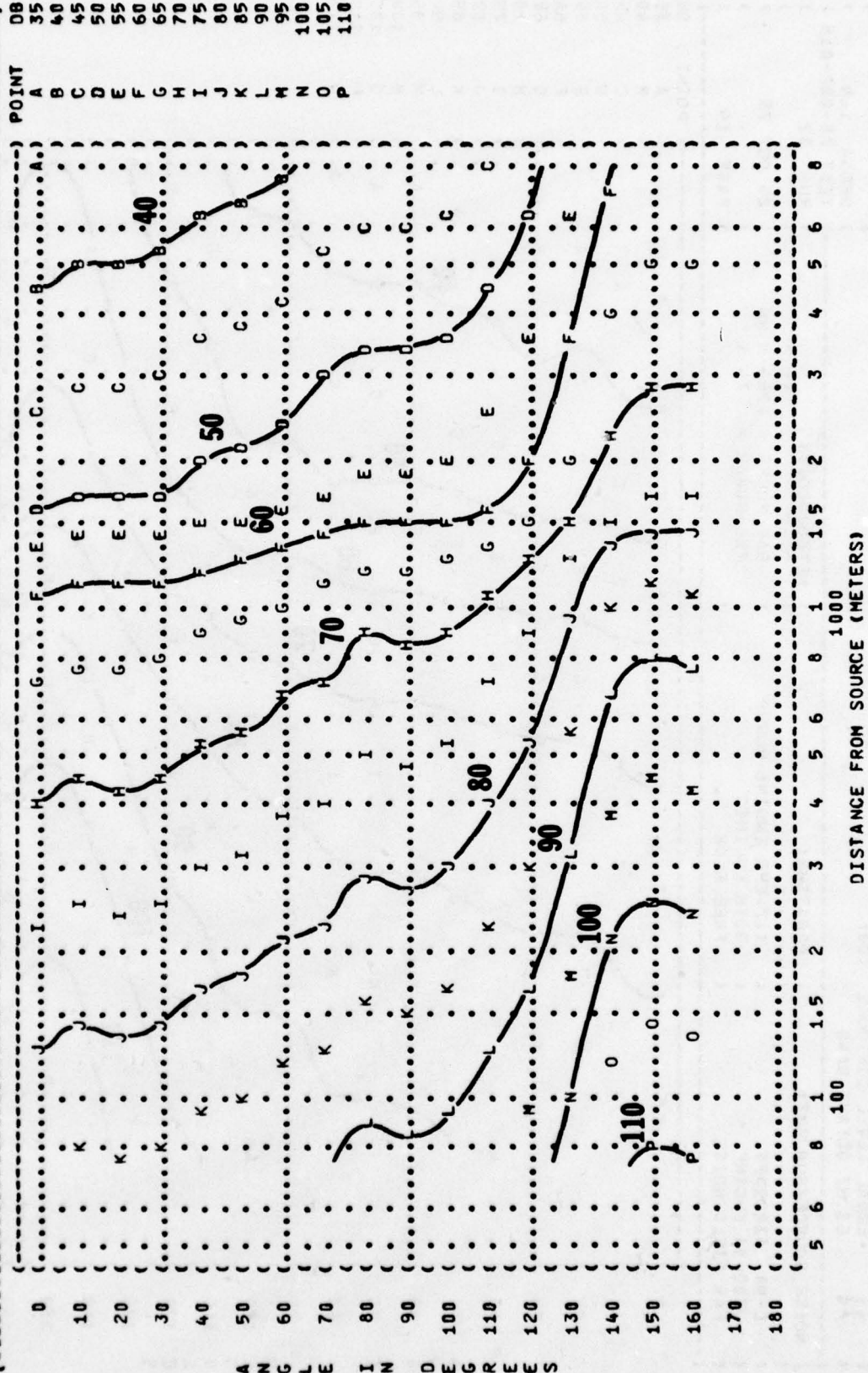
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (IDLE, 1.05 EPR
 (JT80-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 01
 (29 OCT 75
 (PAGE 25
 (POINT




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( ( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )
( ( EQUAL LEVEL CONTOURS (DB) ) )
( ( 11 800 HZ OCTAVE BAND ) OMEGA 1.4 )
( ( NOISE SOURCE/SUBJECT: ) TEST 75-002-015 )
( ( OPERATION: ) RUN 01 )
( ( C-9A AIRCRAFT ) METEOROLOGY: )
( ( JT80-9A ENGINE ) TEMP = 15 C )
( ( FAR FIELD NOISE ) BAR PRESS = .760 M HG )
( ( ) REL HUMID = 70 % )
( ( ) ) )
( ( ) PAGE 26 )
```



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 31.5 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (1.7 EPR ENGINE RUNUP
 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 02
 (29 OCT 75
 (PAGE 18



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (63 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (1.7 EPR ENGINE RUNUP
 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .763 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-015
 (RUN 02
 (29 OCT 75
 (PAGE 19

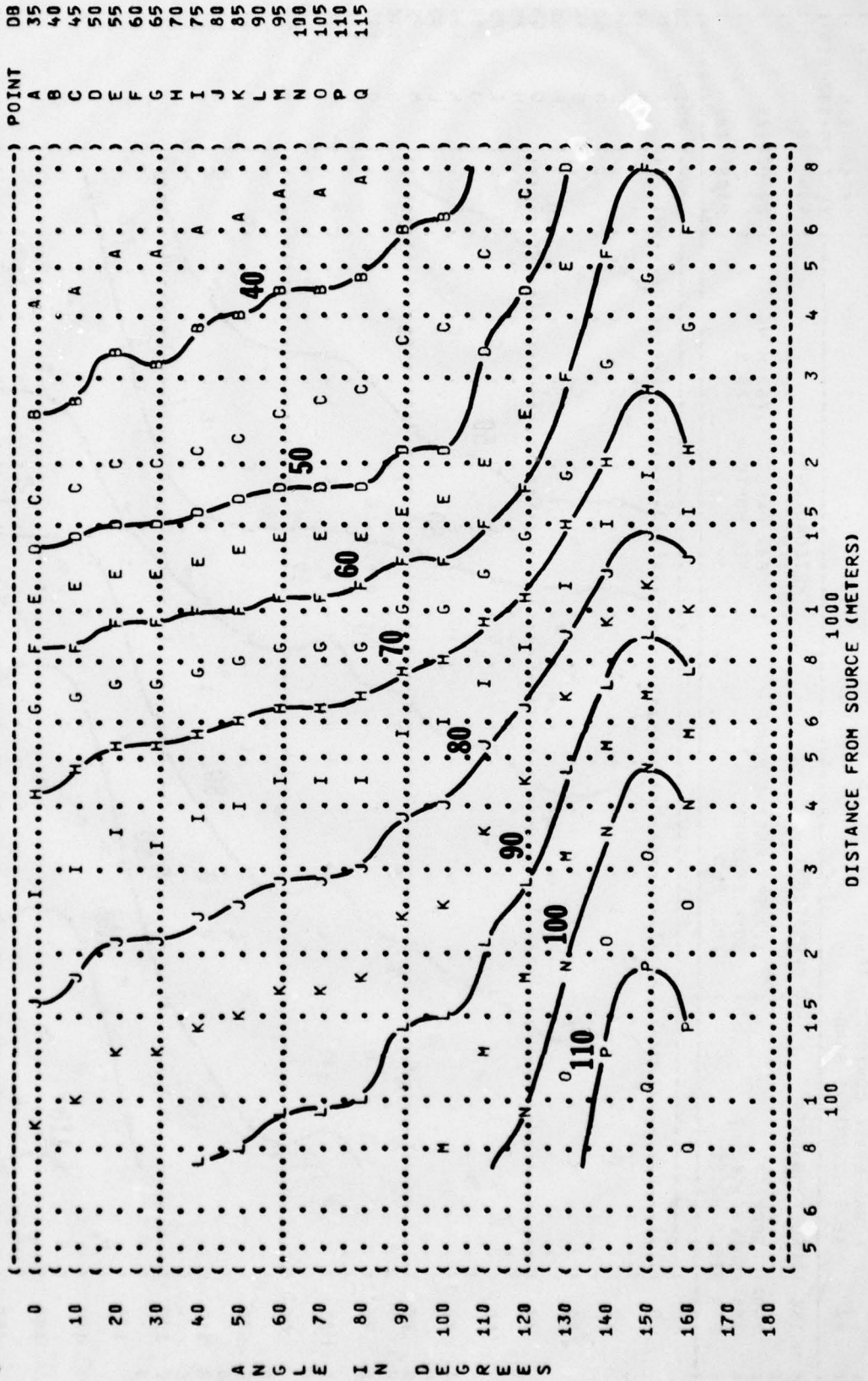


FIGURE 1 SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
125 HZ OCTAVE BAND

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-015

RUN 02

29 OCT 75

PAGE 20

METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

REL HUMID = 70 %

OPERATION:

1.7 EPR ENGINE RUNUP

BOTH ENGINES

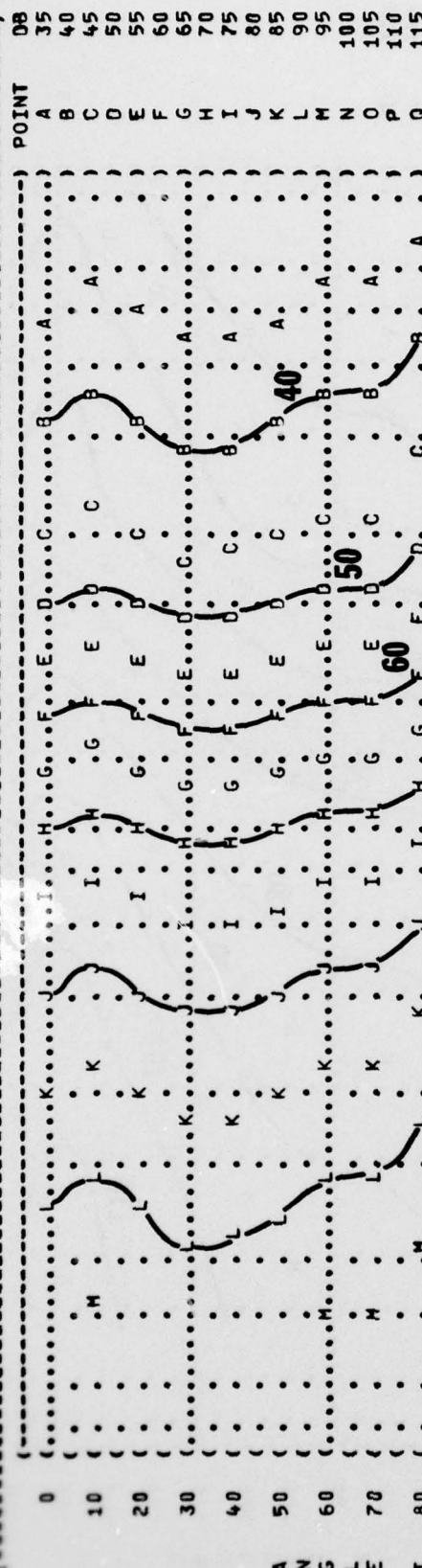
FREE FLOW

NOISE SOURCE/SUBJECT:

C-94 AIRCRAFT

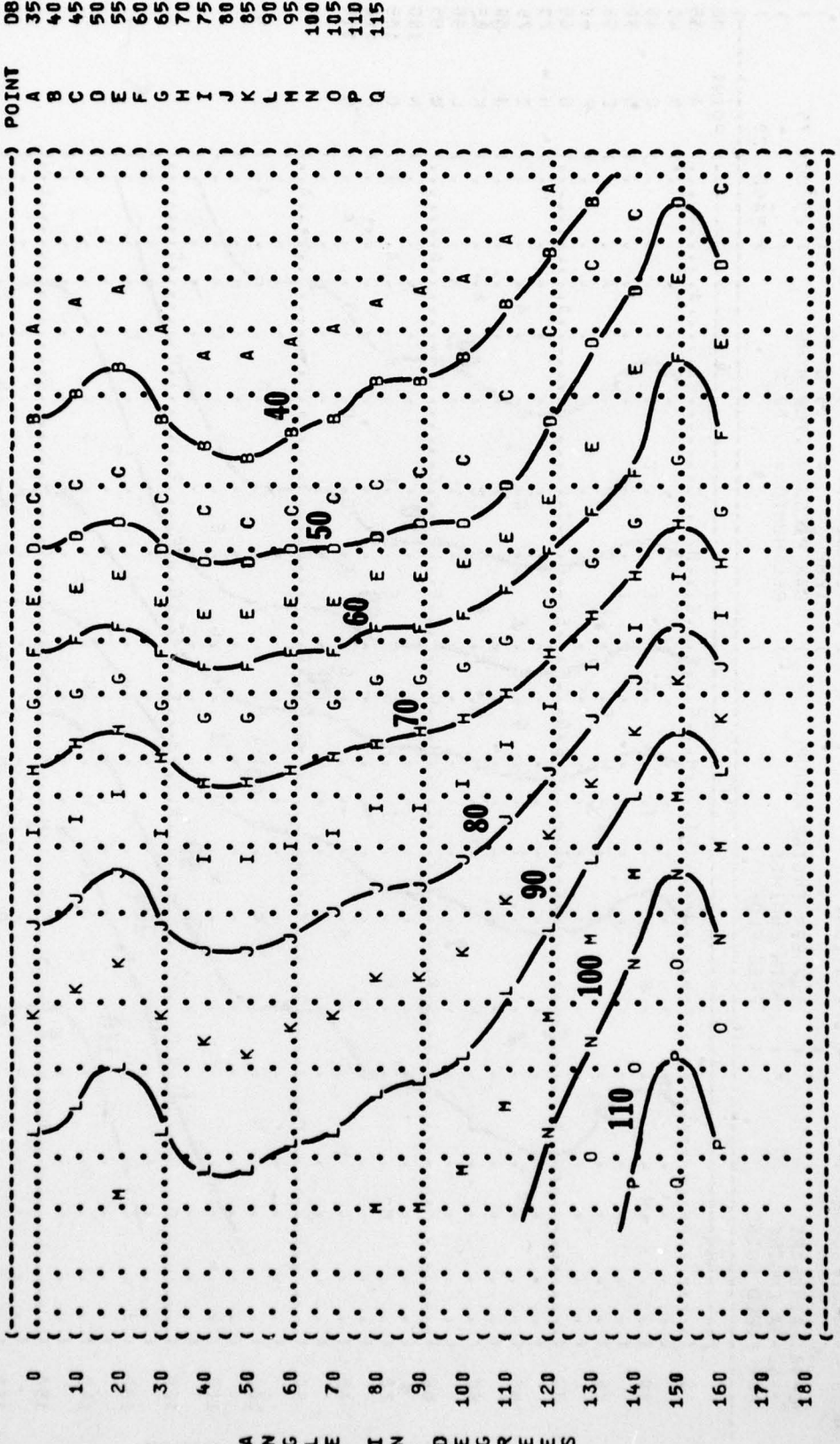
JT80-9A ENGINE

FAR FIELD NOISE



A N G L E I N D E G R E E S

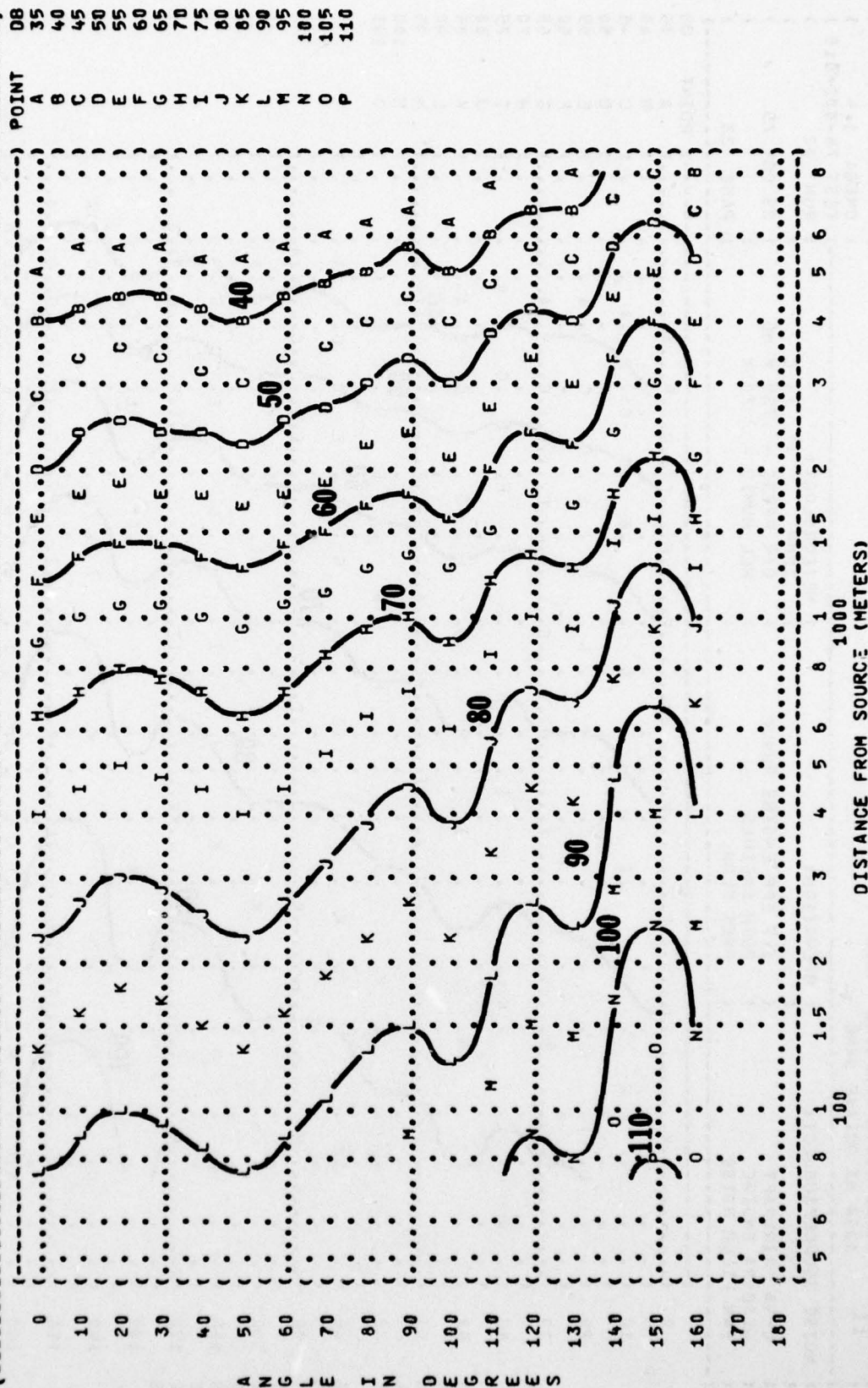
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (250 HZ OCTAVE BAND
 (11
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (1.7 EPR ENGINE RUNUP
 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-015
 (RUN 02
 (29 OCT 75
 (PAGE 21



DISTANCE FROM SOURCE (METERS)

A N G L E I N D E C R E E S

FIGURE:	SOUND PRESSURE LEVEL	{SPL}	IDENTIFICATION:
	EQUAL LEVEL CONTOURS	(DB)	
11	500 HZ OCTAVE BAND		OMEGA 1.4
			TEST 75-002-015
NOISE SOURCE/SUBJECT:	OPERATION:	METEOROLOGY:	RUN 02
		TEMP = 15 C	
C-9A AIRCRAFT	1.7 EPR ENGINE RUNUP	BAR PRESS = .760 M HG	29 OCT 75
JT80-9A ENGINE	BOTH ENGINES	REL HUMID = 70 %	
FAR FIELD NOISE	FREE FLOW		PAGE 22



ANGIE IN DEGREWS

IDENTIFICATION:

11 EQUAL LEVEL CONTOURS (DB) 1000 HZ OCTAVE BAND

III

OMEGA 1.4

TEST 75-002-015

NOISE SOURCE/SUBJECT:

(OPERATIONS

1) METEOROLOGY:

C-9A AIRCRAFT

1-7 FOR ENGINE RUNNING

TEMP = 15 C
BAR PRESS = 760 MM HG

JT8D-9A ENGINE
FAR FIELD NOISE

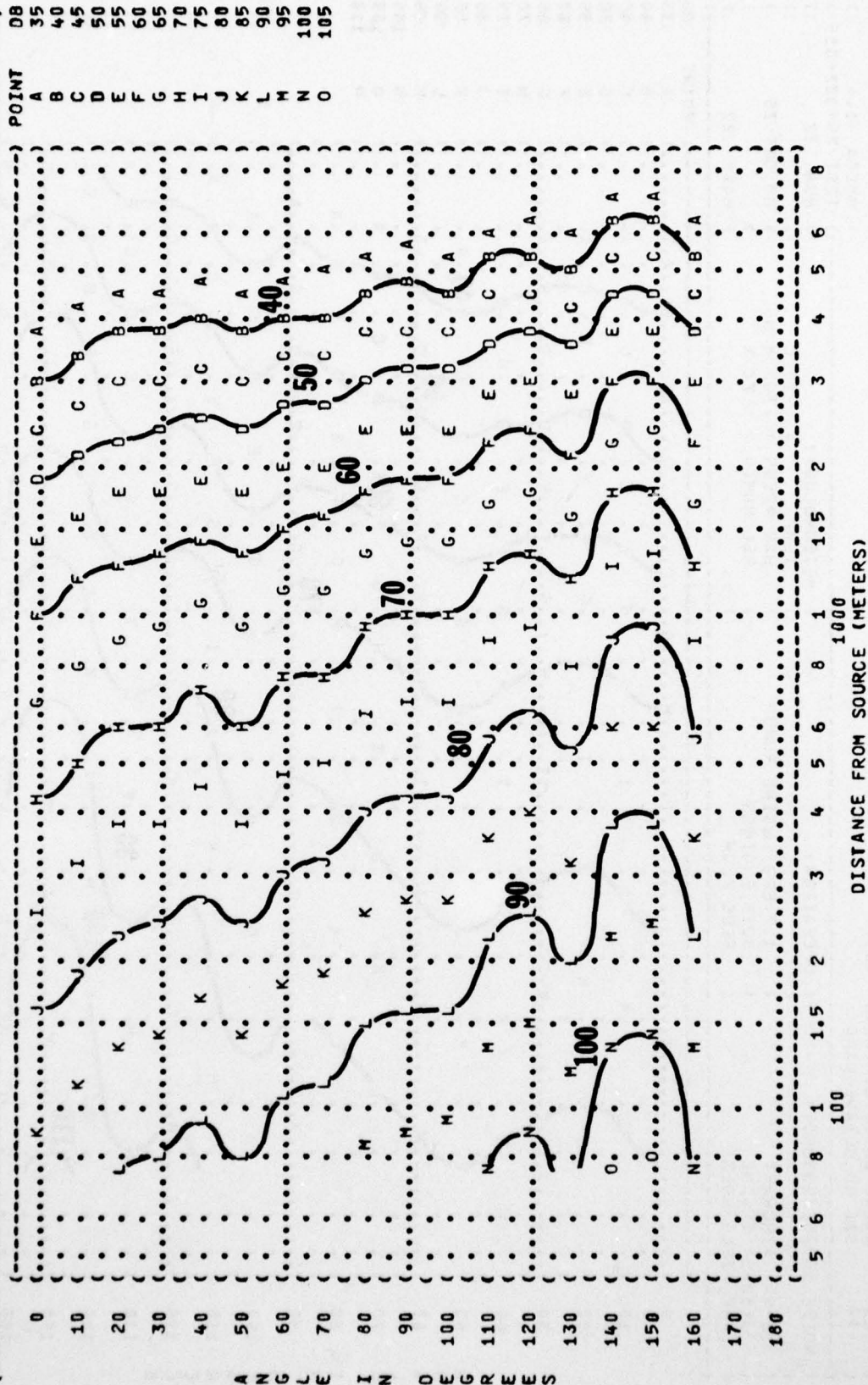
(BOTH ENGINES
(FREE FLOW

REL HUMID = 70 %

FAR FIELD NOISE

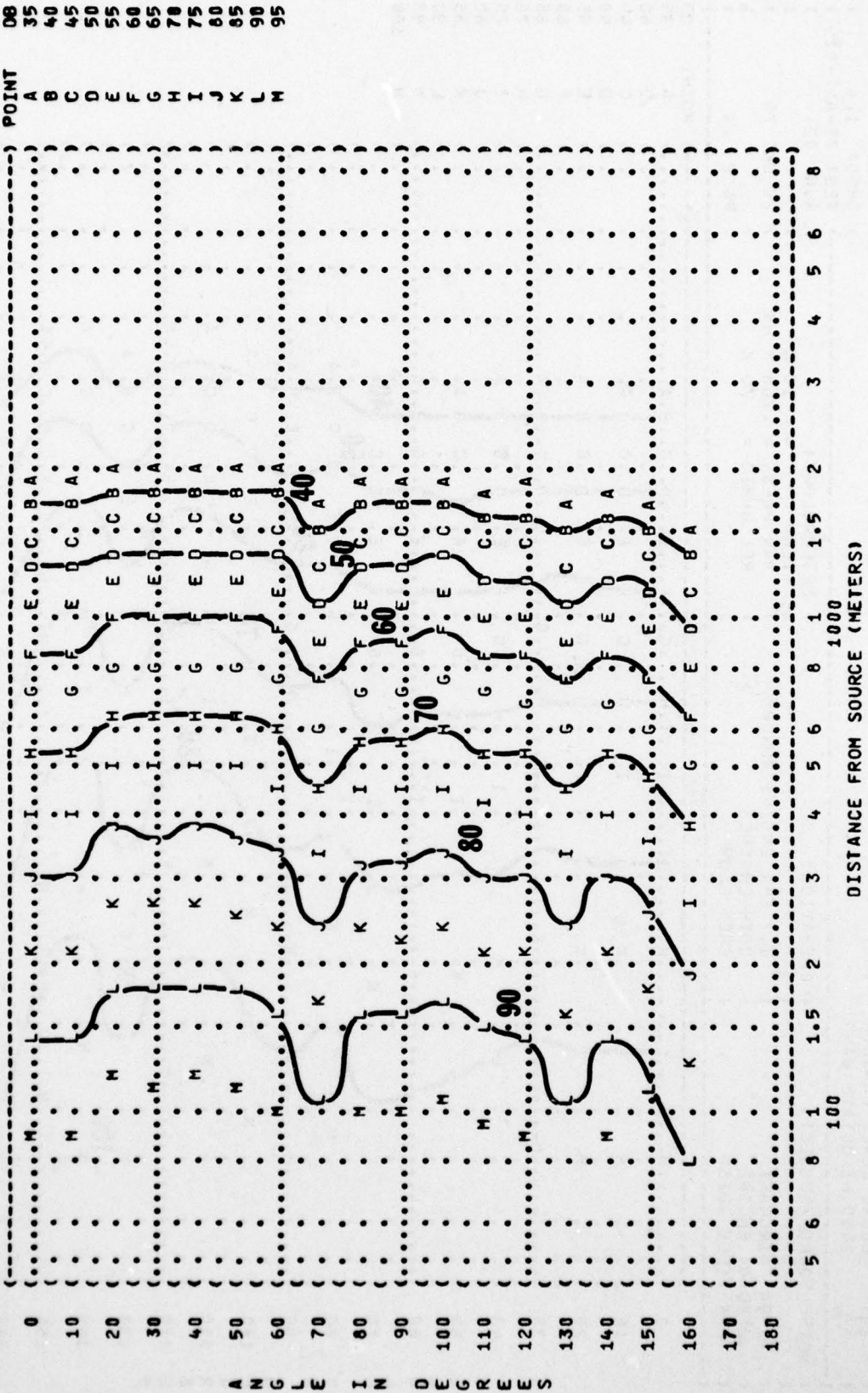
() BOTH ENGINES
() FREE FLOW

PAGE 23



100
1

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (1.7 EPR ENGINE RUNUP
 (JT80-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-015
 (RUN 02
 (29 OCT 75
 (PAGE 25



IDENTIFICATIONS
OMEGA 1.4

OMEGA 1-4

METEOROLOGY:

1.7 EPR ENGINE RUNUP
BOTH ENGINES
FREE FLOW

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

PAGE 26

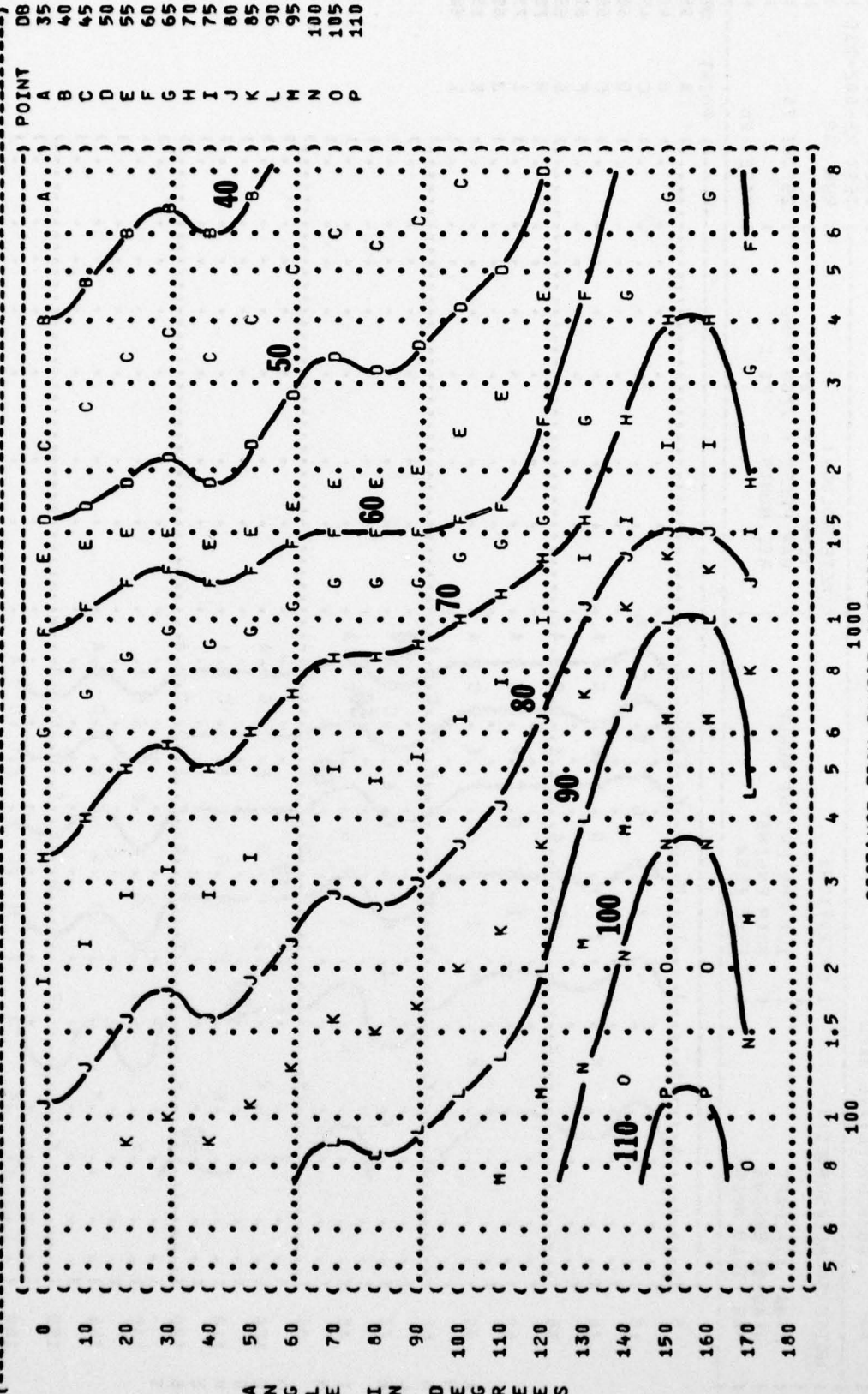
POINT

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75
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85
90

420 LE IN DEGREE

DISTANCE FROM SOURCE (METERS)

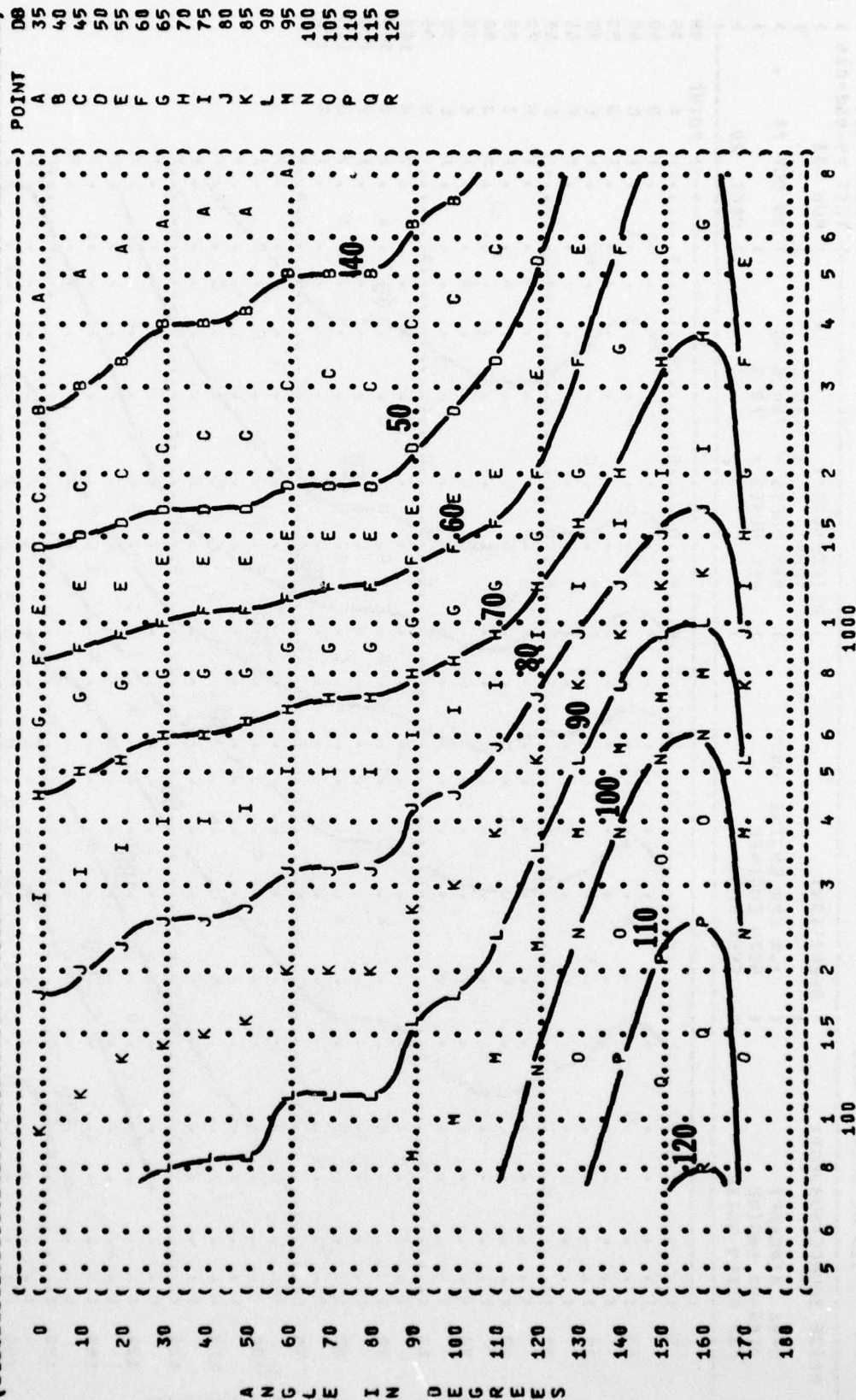
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 (11 EQUAL LEVEL CONTOURS (DB)
 (31.5 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
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 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 03
 (29 OCT 75
 (PAGE 18



ANGLE IN DEGREES

DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (11 EQUAL LEVEL CONTOURS (DB)) OMEGA 1.4)
 (63 HZ OCTAVE BAND) TEST 75-002-015)
 (NOISE SOURCE/SUBJECT:) OPERATION:) RUN 03)
 (C-9A AIRCRAFT) TEMP = 15 C)
 (JT8D-9A ENGINE) BAR PRESS = .760 M HG)
 (FAR FIELD NOISE) REL HUMID = 70 %)
 ()) 29 OCT 75)
 ()) PAGE 19)

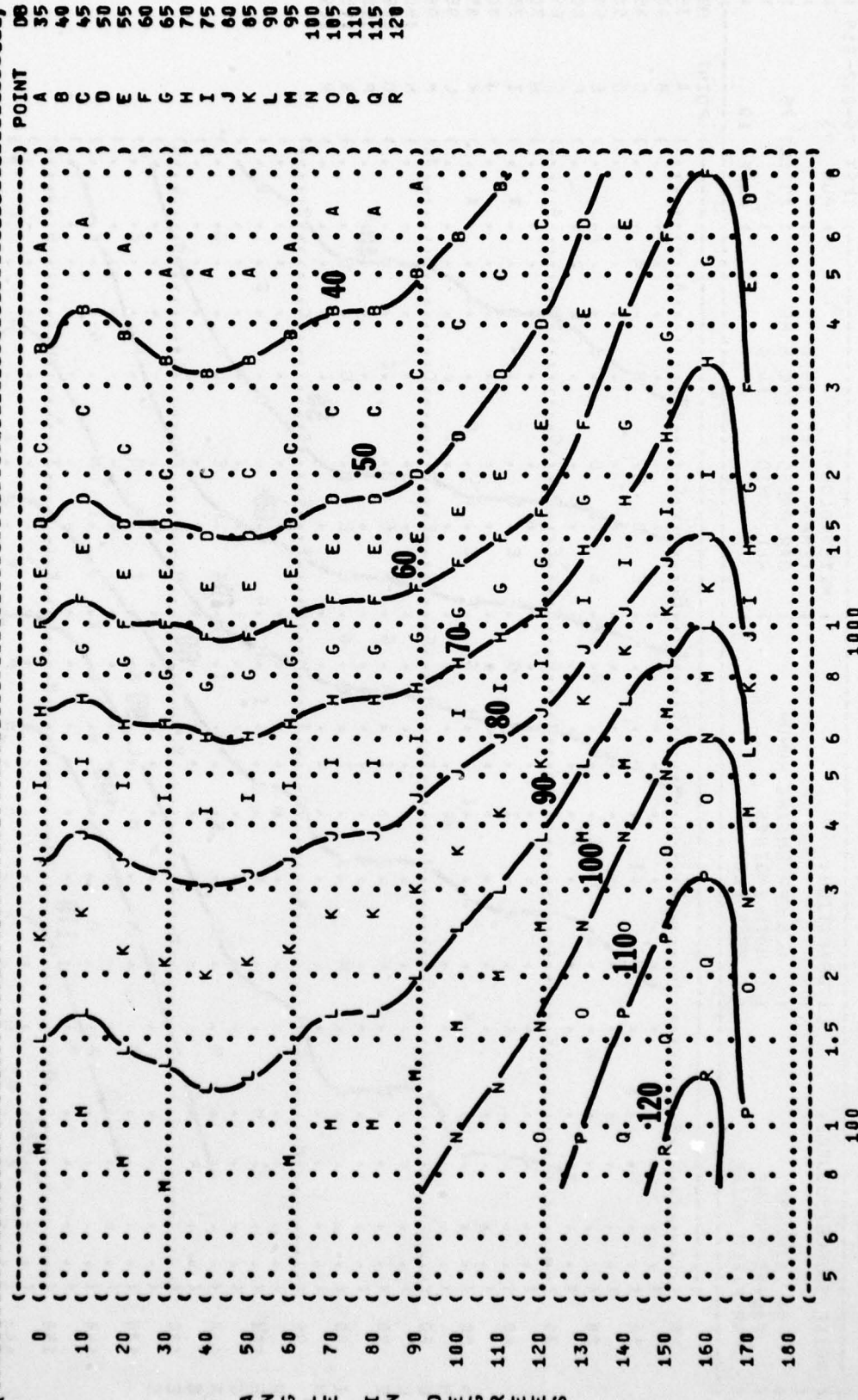


A N G L E I N D E G R E E S

FIGURE: SOUND PRESSURE LEVEL (SPL)
 11 EQUAL LEVEL CONTOURS (DB)
 125 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (C-9A AIRCRAFT (1.8 EPR ENGINE RUNUP) TEMP = 15 C)
 (JT80-9A ENGINE (BOTH ENGINES) BAR PRESS = .760 H HG)
 (FAR FIELD NOISE (FREE FLOW) REL HUMID = 70 %)

IDENTIFICATION:)
) OMEGA 1.4
) TEST 75-002-015
) RUN 03
) 29 OCT 75
) PAGE 20

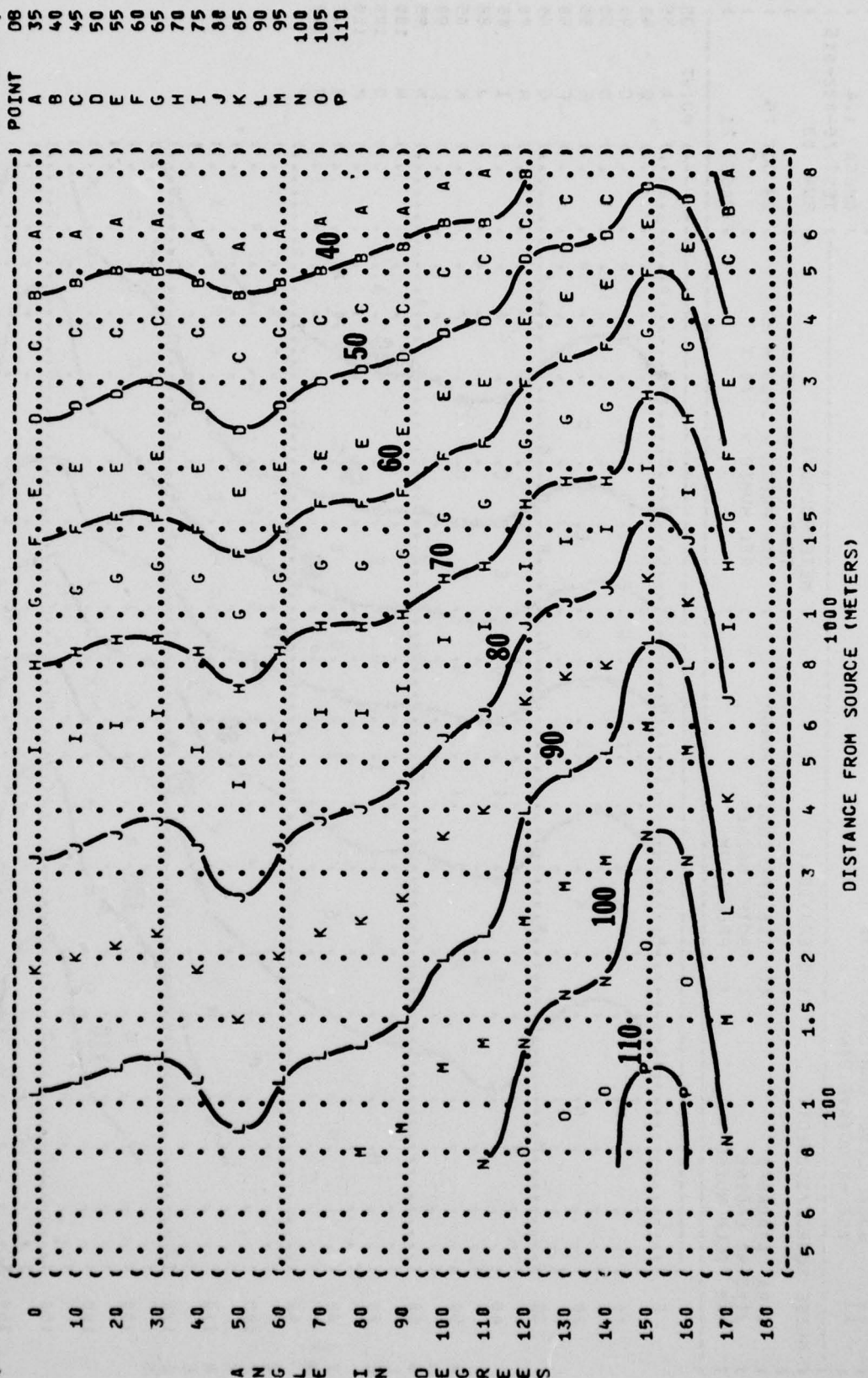


A N G L E I N D E E R E E S

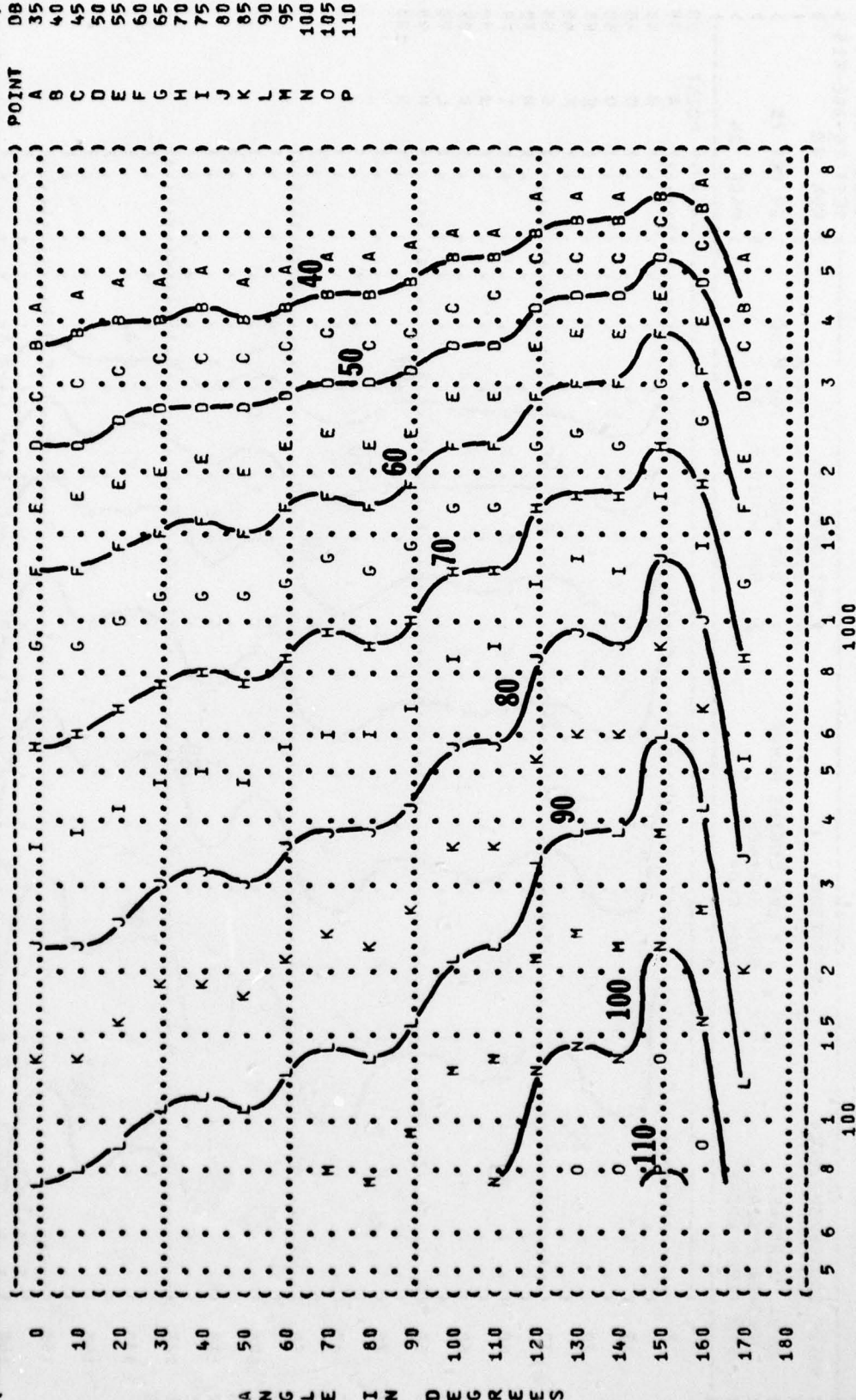
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(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 (C-9A AIRCRAFT
 (JT80-9A ENGINE
 (FAR FIELD NOISE
 (OPERATION:
 (1.8 EPR ENGINE RUNUP
 (BOTH ENGINES
 (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-015
 (RUN 03
 (29 OCT 75
 (PAGE 22

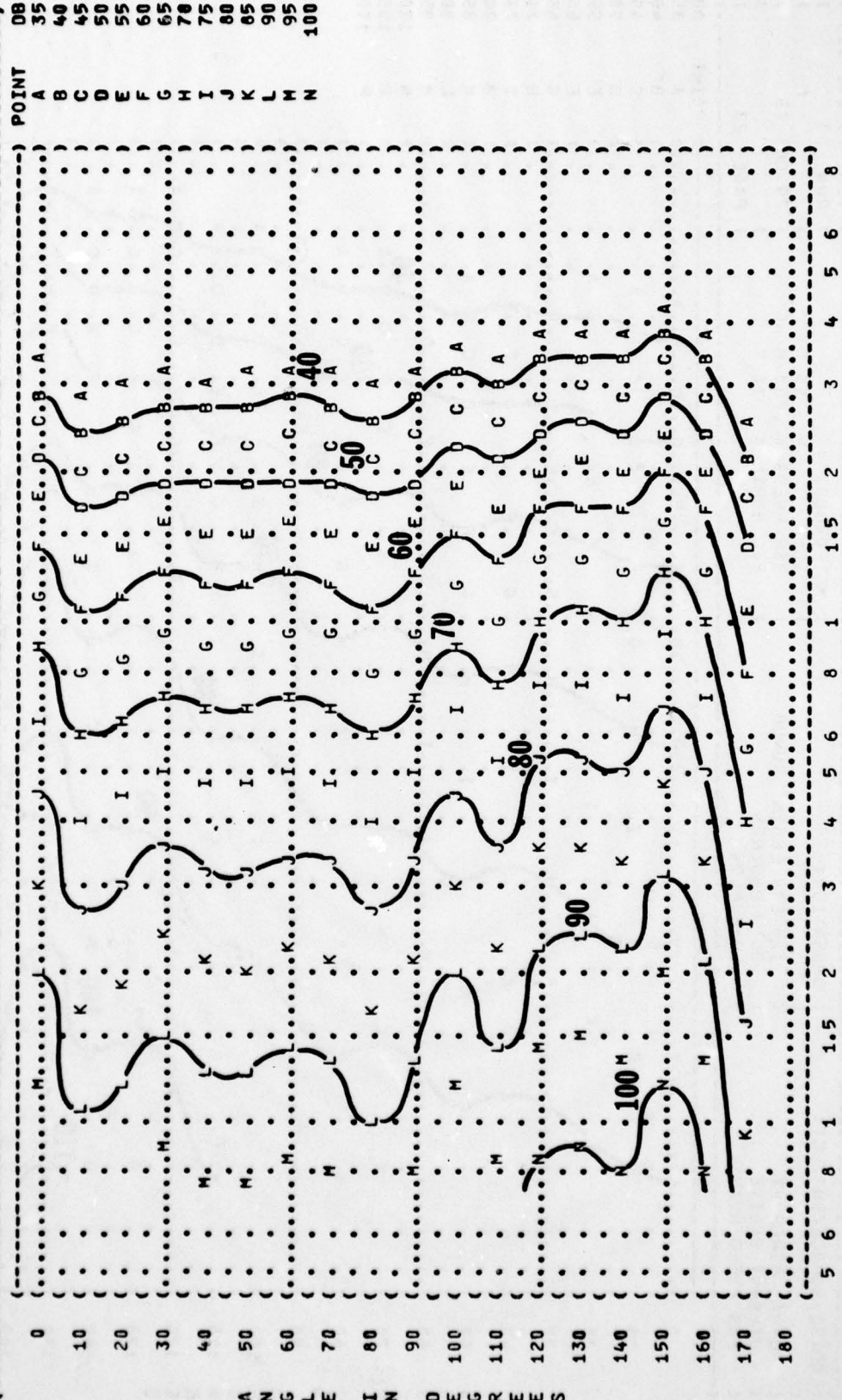


(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (1000 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (JT80-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (1.8 EPR ENGINE RUNUP)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 03)
 (29 OCT 75)
 (PAGE 23)



DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (2000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (1.8 EPR ENGINE RUNUP
 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-015
 (RUN 03
 (29 OCT 75
 (PAGE 24



DISTANCE FROM SOURCE (METERS)

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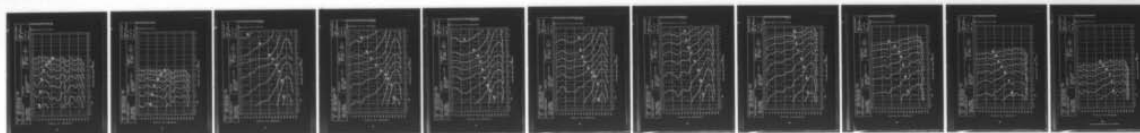
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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK: VOLUME 84. C-9A AIRC--ETC(U)
APR 77 R G POWELL

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AMRL-TR-75-50-VOL-84

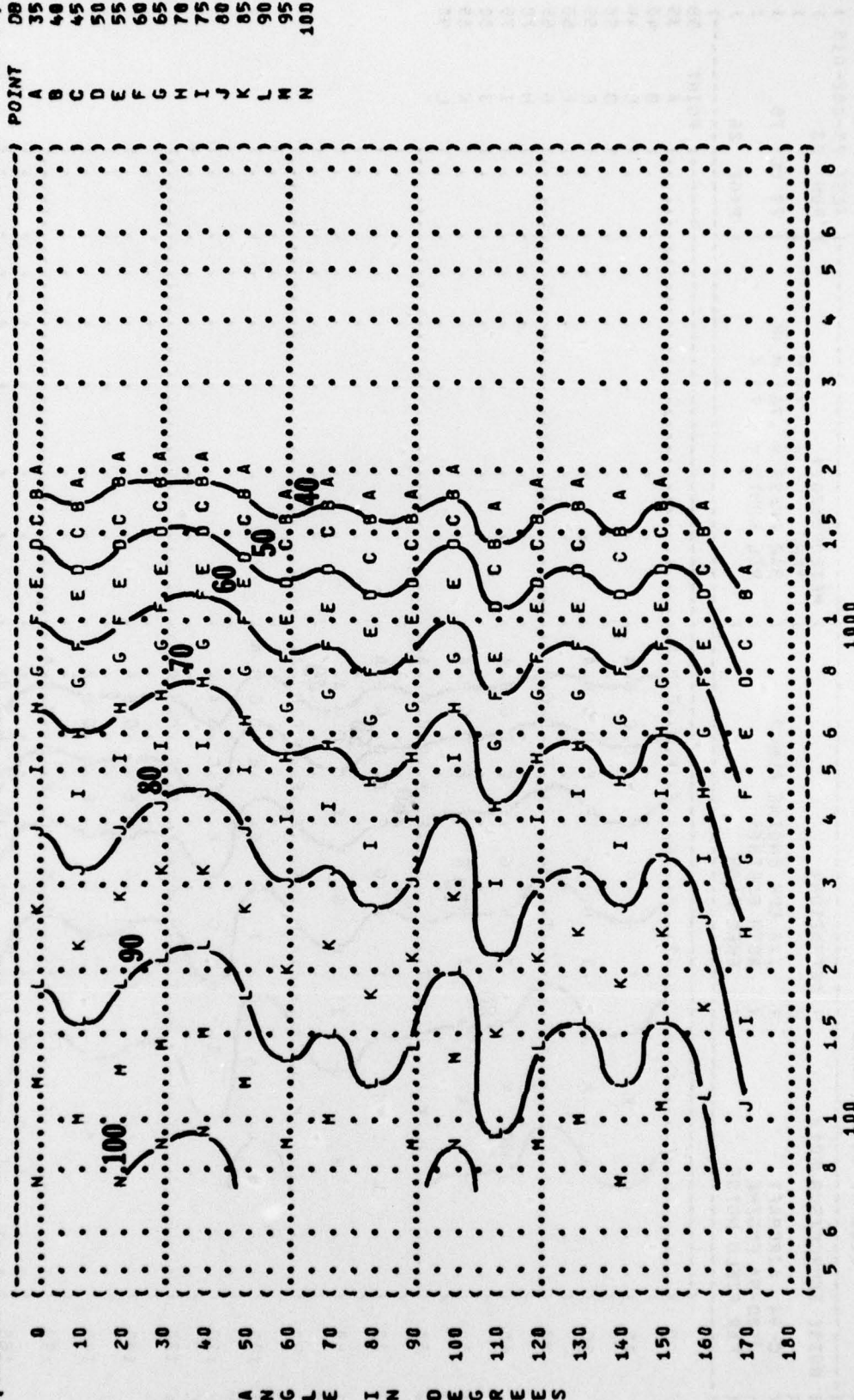
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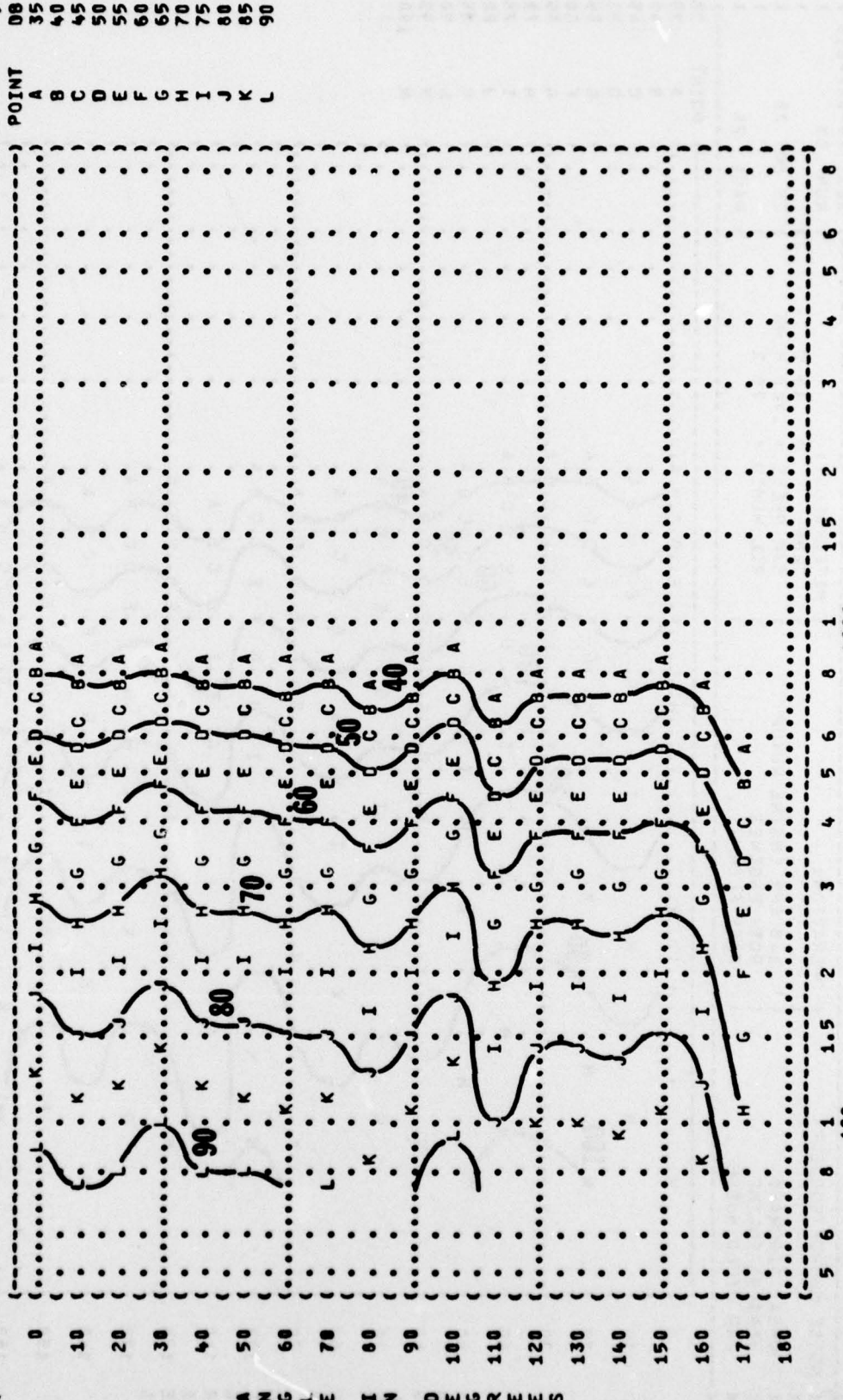


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(FIGURE 1 SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 ((OPERATION:
 ((1.8 EPR ENGINE RUNUP
 ((BOTH ENGINES
 ((FREE FLOW
 (C-9A AIRCRAFT
 (JT80-9A ENGINE
 (FAR FIELD NOISE
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-015
 (RUN 03
 (29 OCT 75
 (PAGE 25



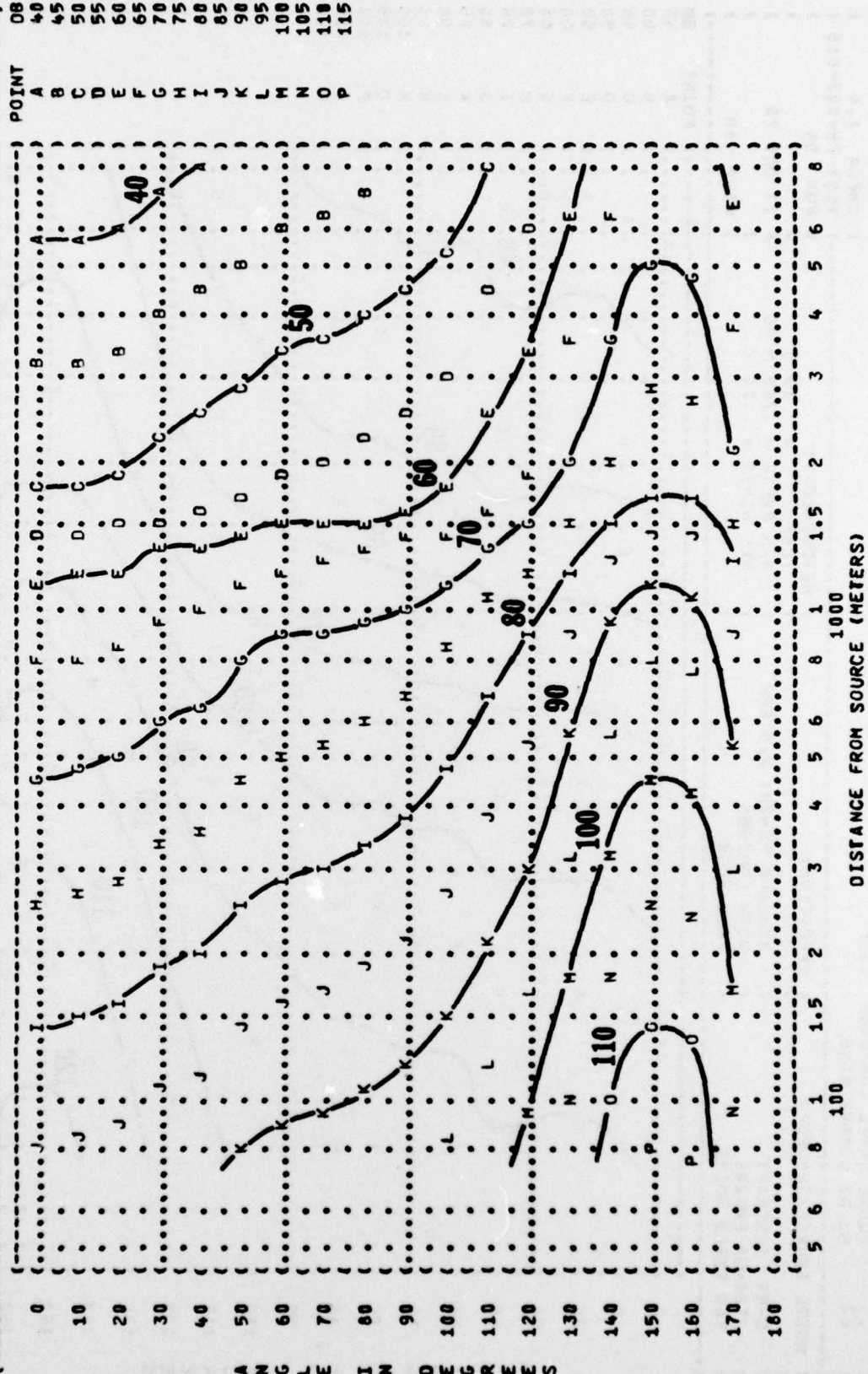
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 (8000 HZ OCTAVE BAND
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 (JT80-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 H HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-015
 (RUN 03
 (29 OCT 75
 (PAGE 26



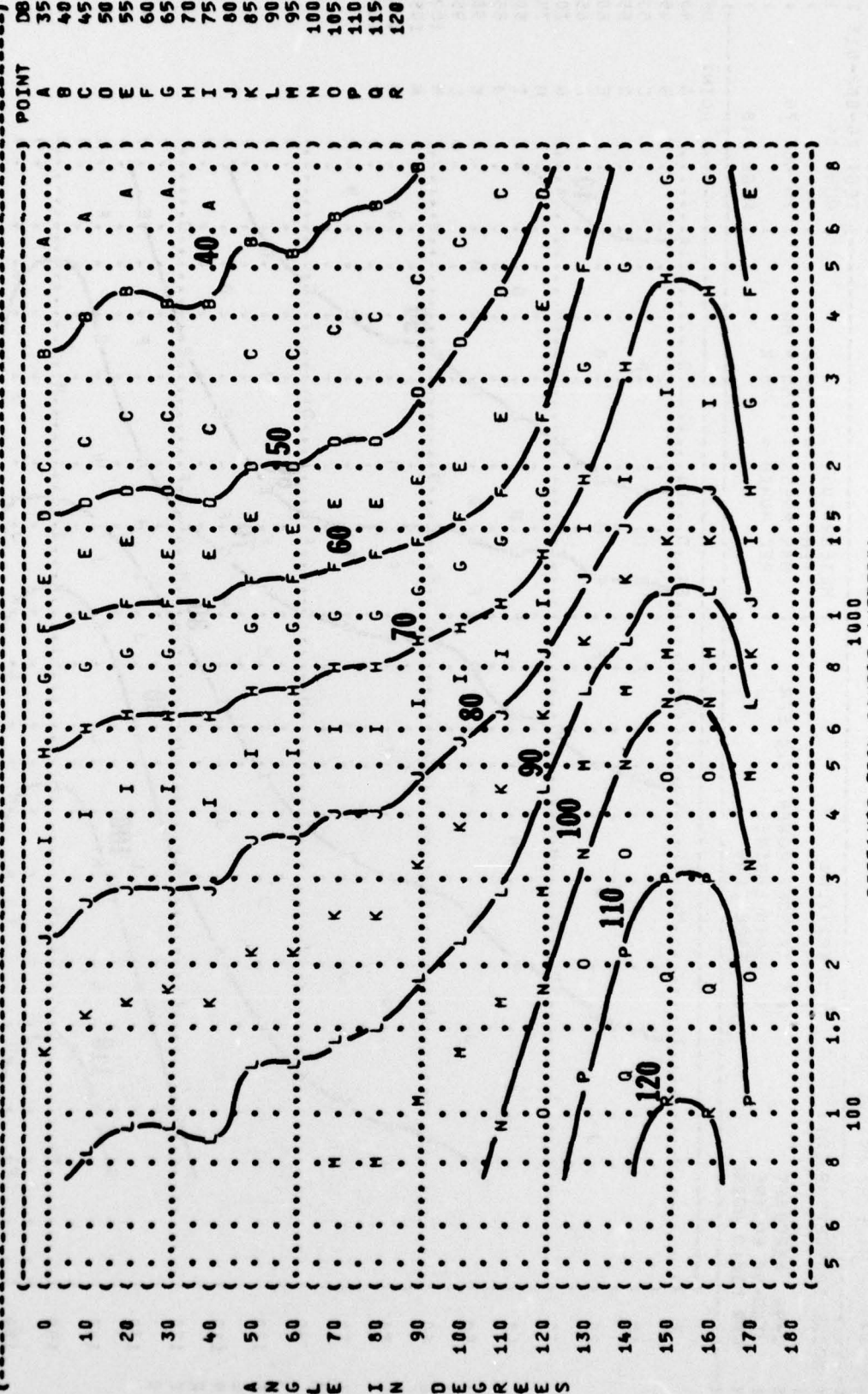
DISTANCE FROM SOURCE (METERS)

ANGLE IN DEGREES

(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (31.5 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (C-9A AIRCRAFT)
 (JT80-9A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (TAKEOFF POWER, 2.0 EPR)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-015)
 (RUN 04)
 (29 OCT 75)
 (PAGE 18)

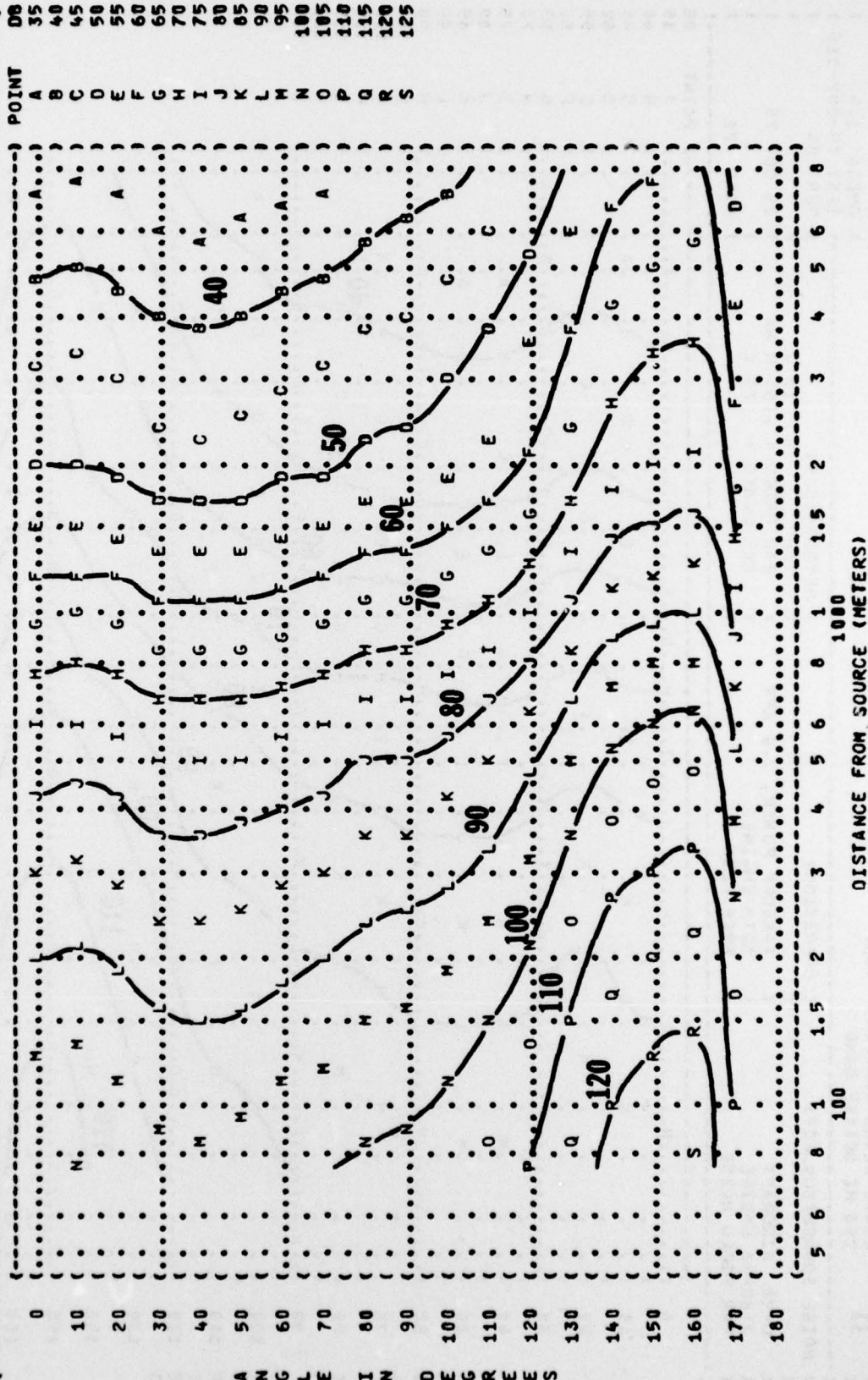


((FIGURE: SOUND PRESSURE LEVEL (SPL)
 ((11 EQUAL LEVEL CONTOURS (DB)
 ((63 HZ OCTAVE BAND
 ((NOISE SOURCE/SUBJECT: (OPERATION:
 ((C-9A AIRCRAFT (TAKEOFF POWER, 2.0 EPR
 ((JT8D-9A ENGINE (BOTH ENGINES
 ((FAR FIELD NOISE (FREE FLOW
 ((METEOROLOGY: (TEMP = 15 C
 ((BAR PRESS = .760 H HG
 ((REL HUMID = 70 %
 ((IDENTIFICATION: (OMEGA 1.4
 ((TEST 75-002-015
 ((RUN 04
 ((29 OCT 75
 ((PAGE 19

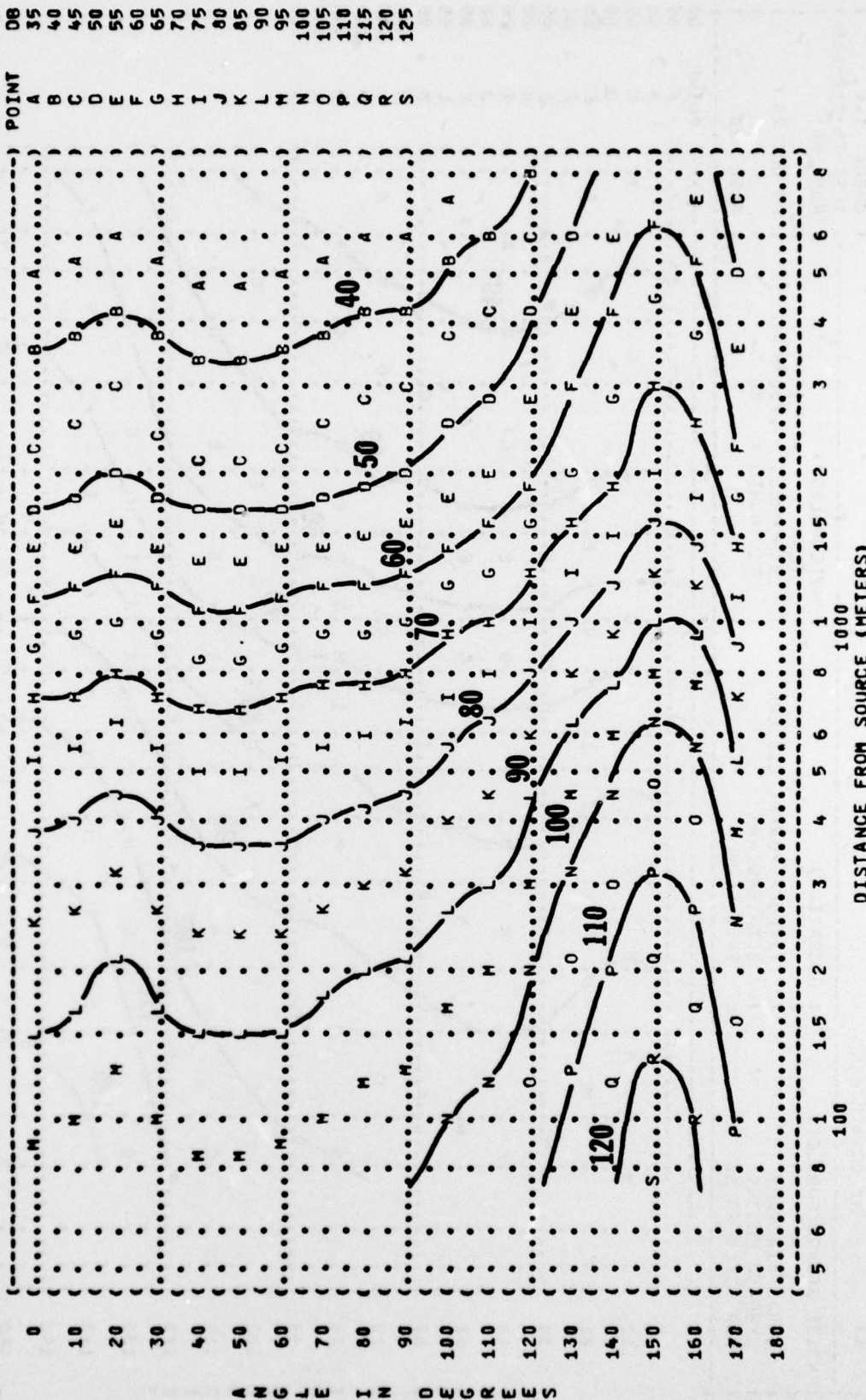


DISTANCE FROM SOURCE (METERS)

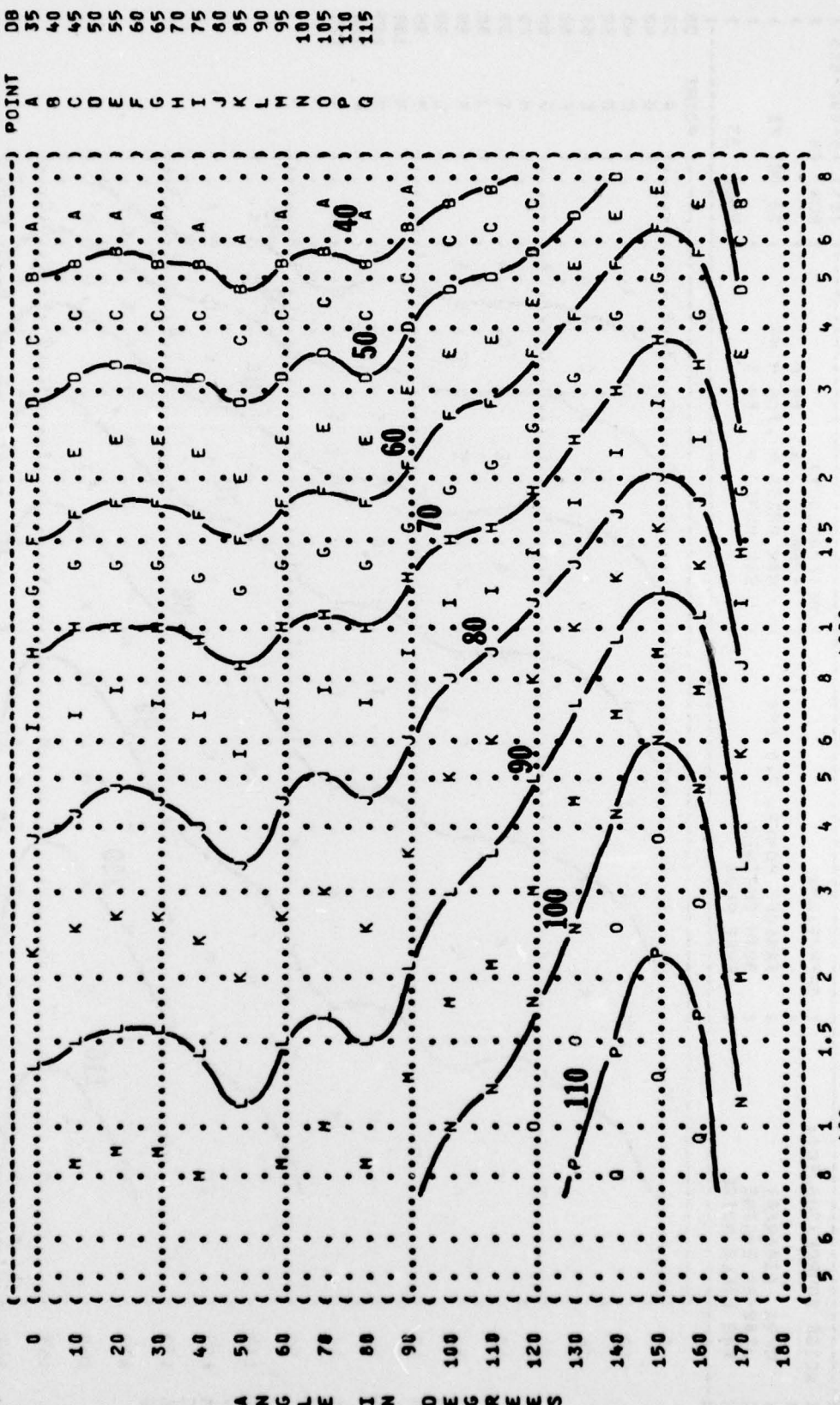
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 OMEGA 1.4
 TEST 75-002-015
 RUN 04
 METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 OPERATION:
 TAKEOFF POWER, 2.0 EPR
 BOTH ENGINES
 FREE FLOW
 NOISE SOURCE/SUBJECT:
 C-9A AIRCRAFT
 JT8D-9A ENGINE
 FAR FIELD NOISE



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (II EQUAL LEVEL CONTOURS (DB)
 (250 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (TAKEOFF POWER, 2.0 EPR
 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 04
 (29 OCT 75
 (PAGE 21

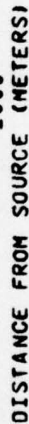


(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (TAKEOFF POWER, 2.0 EPR
 (JT8D-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 04
 (29 OCT 75
 (PAGE 22

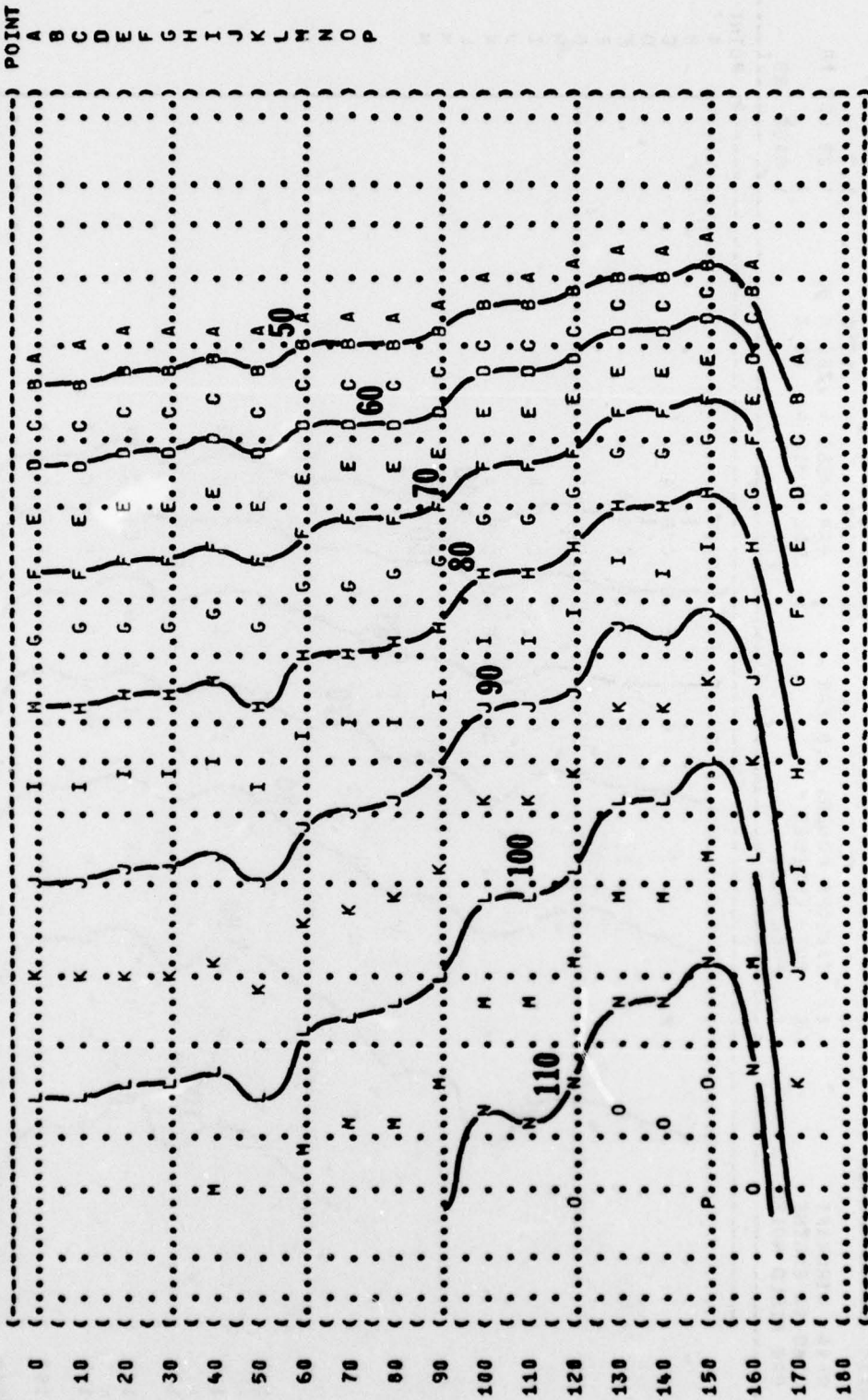


A N G L E I N D E G R E E S

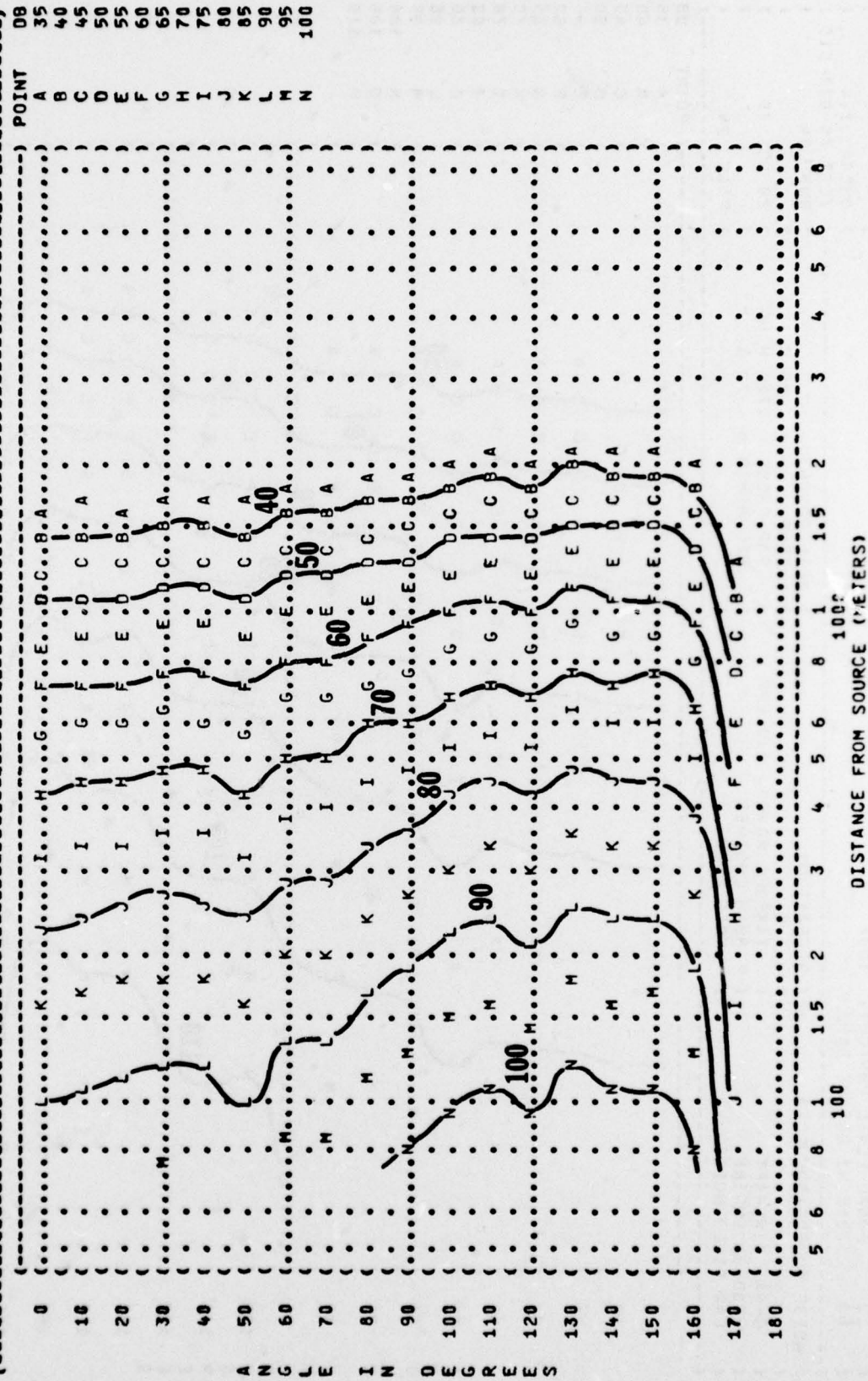
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NOISE SOURCE/SUBJECT:	OPERATION:	METEOROLOGY:	RUN	04
C-9A AIRCRAFT	TAKEOFF POWER, 2.0 EPR	TEMP = 15 C	29	OCT 75
JT8D-9A ENGINE	BOTH ENGINES	BAR PRESS = .760 M HG		
FAR FIELD NOISE	FREE FLOW	REL HUMID = 70 %	PAGE	24



((FIGURE: SOUND PRESSURE LEVEL (SPL)
 ((EQUAL LEVEL CONTOURS (DB)
 ((11 4000 HZ OCTAVE BAND
 ((NOISE SOURCE/SUBJECT: (OPERATION:
 ((C-9A AIRCRAFT (TAKEOFF POWER, 2.0 EPR
 ((JT80-9A ENGINE (BOTH ENGINES
 ((FAR FIELD NOISE (FREE FLOW
 ((METEOROLOGY: TEMP = 15 C
 ((BAR PRESS = .760 M HG
 ((REL HUMID = 70 %
 ((IDENTIFICATION: OMEGA 1.4
 ((TEST 75-002-015
 ((RUN 04
 ((29 OCT 75
 ((PAGE 25



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 8000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (C-9A AIRCRAFT (TAKEOFF POWER, 2.0 EPR
 (JT80-9A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-015
 (RUN 04
 (29 OCT 75
 (PAGE 26

